Railway Age
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DAILY EDITION

FIRST HALF OF 1928. No. 24B — NEW YORK—THURSDAY, JUNE 21, 1928—ATLANTIC CITY — SEVENTY-THIRD YEAR

MINER

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PROVIDES

MAXIMUM PROTECTION

ELECTRICITY IMPROVES SERVICE AND INCREASES REVENUE

THE GREAT NORTHERN

electrified to improve operating conditions

When the Great Northern built a four-mile tunnel under the peak of the Cascades, the operation of steam locomotives was attended with difficulty, and electric locomotives were substituted. This was in 1907.

The results were so satisfactory that when a greater tunnel was undertaken in 1925, it was decided to equip this, too, for electric operation and also to electrify 66 miles of heavy grade at the ends of the tunnel. Locomotives of the motor-generator type, among the largest in the world, were selected.

These locomotives, which overcome mountain grades without loss of scheduled time, will keep the tunnel free of smoke and dirt and will make it possible to draw luxurious passenger trains and heavy freights with speed, frequency, and comfort—while materially decreasing the expense of operation.

Not only in mountainous divisions, but on the long, level stretches of main line, electric operation produces more revenue, simplifies operation, reduces maintenance, and gives better service.

Manifold advantages of electric operation have resulted from the use of electric locomotives and cars on main and branch lines, at terminals, and in suburban traffic; gas-electric cars for light-traffic lines; oil-electric locomotives in freight yards; and gas-electric buses for feeder service. Electric floodlights expedite freight sorting, and electric signal systems promote safe transportation.

AMERICAN LOCOMOTIVE
GENERAL ELECTRIC

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What of the Locomotive Maintenance Problems?

THE life of a modern locomotive may reasonably be expected to extend over a period of from 20 to 30 years. Except for the first few months of its existence, while it is still new, the ability to earn a profit for a railroad depends to a large extent on the character of maintenance that it receives. The important factors, then, in dealing with the question of motive power are first, proper design; second, maximum utilization, and third—and possibly most important—adequate maintenance of a high standard. For a number of years the Mechanical Division has contributed to the progress of locomotive development through the activities of the Comittee on Locomotive Design and Construction. More recently, through the excellent work of the Committee on the Utilization of Locomotives, the Division has advanced the utilization of motive power in a manner that has made possible the enviable operating records of recent years. But what of the problem of locomotive maintenance? This has been left almost entirely to the minor mechanical associations for solution and the existing standard of maintenance stands as a tribute to their activities. Each year the problem is becoming more difficult and its solution will depend upon a more intensive study of the whole question of modern shop layout, selection and utilization of machine tools and shop equipment, scheduling systems and shop operation. Is not the time ripe for the Mechanical Division to recognize the importance of this phase of railroad operation by the creation of a committee to study this subject. Such a committee could function independently or as a sub-committee of the Committee on the Design of Shops and Engine Terminals.

Adequate Motor Coach Maintenance Important

THE motor coach with its component parts, each designed to do a specific job, is a machine in the sense that systematic attention is needed if its output is to be secured at a reasonable cost. As a machine, it must be repaired, inspected and serviced at periodic intervals if its output, when measured in miles of service produced, is to be maintained at a maximum. Several factors must be considered to secure maximum performance with a minimum of maintenance and delays. The careful selection of those in direct charge of maintenance is of particular importance, for on them rests the responsibility for the development of ways and means to obtain the desired result. Of equal importance is the development of an inspection system correctly baalnced to overcome the problems incidental to the individual company. Fixed inspection schedules when followed thoroughly, result in a high production of revenue miles. Deferred maintenance should not be tolerated. Hit-or-miss methods result in too many road failures. Adequate maintenance at a minimum cost can be secured only by using modern maintenance facilities. Both the garage and shop must be laid out to fit the procedure for inspection and repairs. Back-tracking and unnecessary movements should not be permitted. Modern machine tools and shop facilities are required to prevent waste in man-hours. Finally, the effectiveness of any maintenance plan must be measured. This requires records—paper work—to indicate how well the units stand up in service and how much they cost to operate. One way of measuring the standard of maintenance is in terms of coach-miles produced per road failure balanced against the cost of labor and material used. This requires a carefully planned and standardized system. It is only by setting up such a system for periodic comparison that a carrier can tell when maintenance is adequate for profitable operation.

More Power to Your Locomotive Terminals

"WE learned a lot about locomotive terminals on this last job," said the chief engineer of a railroad that has just completed a modern, super-power locomotive terminal. "And when we build our next terminal we're going to start with the power plant," he added. The power plant is the heart of any locomotive terminal and the day when a few old locomotive boilers were regarded as adequate for supplying stack blower steam, running the compressor and heating the engine-house in winter time is, fortunately, past. High-pres-

sure, water-tube boilers, capable of operating efficiently at substantial overloads and utilizing the cheapest grade of fuel available, are coming to be regarded as essential. Several roads have recently built new power plants at existing terminals and found them a good investment. In North Dakota, an improvement of this character has enabled the railroad to burn lignite at its terminal power plant costing less than $2.00 per ton, in place of locomotive coal imported from the East at a cost of nearly $5.00 per ton. In the Southwest, natural gas is being utilized more extensively than ever in power plants at locomotive terminals, all of which emphasizes the need for higher boiler settings. In this connection, one railway system operating in the Southwest recently inaugurated a systematic program for raising stationary boiler settings at all of its power plants with gratifying results both in respect to fuel economy, increased steam-generating capacity and reduced maintenance. Another new development in power-plant operation at locomotive terminals is the elimination of boiler feedwater heaters, in place of which all exhaust steam from the compressors and other auxiliaries is thrown directly into the condenser from the hot water washout and filling system. The boiler feedwater is then drawn directly from the locomotive filling water reservoir, in which a temperature of 180 to 190 deg. is regularly maintained by means of heat in the steam from blown-down locomotives, as well as from the power plant auxiliaries. Where the terminal is equipped for supplying locomotives with steam generated in stationary boilers operating at an efficient rate and utilizing low-priced fuel in place of steaming up locomotives with a fire on the grates requiring higher priced fuel burned at a less efficient rate, a considerable investment in modern stationary boilers is easily justified.

Leadership in Fuel Saving Essential

"THE human element involved in any undertaking is only as efficient, loyal and enthusiastic as the leadership under which it is working. Interest and enthusiasm are infectious and the rank and file are exposed only to the degree to which their leadership has become infected. The conservation of fuel is no exception. Executives of whatever rank cannot wink at violations of fuel-saving standards and expect efficiency from those intrusted with the actual conversion of fuel into units of heat and power. Railway executives must first be thoroughly sold to the proposition of fuel economy; they must not only believe there is something in saving a pound of coal or gallon of oil per thousand gross ton-miles, but they must be enthusiastically sold to the idea;—it must become an obsession with them before they can hope successfully to pass it on and sell it to those who report on them." These generalities, forming the opening paragraphs of a brief paper on fuel conservation recently prepared by Evan Williams, fuel supervisor of the Chicago & North Western, are quoted without apology, representing as they do a truth which needs frequent restatement.

Fuel economy does not begin on locomotives, and Mr. Evans aptly calls attention to the fact that engine crews, who daily see tons of fuel wasted due to track and signal conditions, poorly-maintained power, careless despatching, unnecessary stopping of heavy trains on grades, or anyone of a hundred similar factors, are not likely to respond whole-heartedly to perfunctory fuel economy appeals by a management which permits one or more of these conditions to exist.

Electrical Activities

THERE is an old saw that says "Transportation is civilization." At a transportation meeting of the National Electric Light Association, held on the Million Dollar Pier a few weeks ago, a prominent speaker parodied this by saying, "Electrification is civilization." The implication of this statement is the old one that the railroads are slow to make use of the advantages afforded by electrical equipment. Activities at the railway conventions afford an effective reply to the accusation. Electrical apparatus is included in the products being shown by something more than 25 per cent of the exhibitors. This morning, at the Hotel Dennis, progress reports will be presented on eight different electrical subjects and tomorrow committees on electric rolling stock and locomotive and car lighting will report to the Mechanical Division. There are also four other associations which are energetically attacking the railroad electrification problem. It is the opinion of some that much of the various association activities are in need of some organization and consolidation, but it can scarcely be said that electrical matters are receiving insufficient consideration in the railway field.

Super-Power Terminals

IT is evident that some radical terminal developments are in order on many railroads before these roads can hope to realize the potential economy and capacity of the modern locomotive. What may properly be described as the super-power terminal is a development in locomotive terminal design, construction and equipment, as far in advance of the standards regarded as up-to-date ten years ago as the super-power locomotive is superior to best examples of locomotive design created ten years ago. As in the case of the locomotive, this is not a development in size alone, although it is not infrequent to find enginehouses and turntables costructed ten years ago that are now being lengthened to meet the requirements of recently purchased motive power, from which it might be well to draw a lesson in planning new terminal construction. The increase in tender sizes alone has necessitated lengthening the turntable and extending the outer wall of more than one roundhouse within the last two years. The articulated turntable, as mentioned on the convention floor Wednesday, has amply demonstrated its worth, not only because of the additional length to which it is so easily adaptable, but for expediting the movement of locomotives in and out of the roundhouse without the necessity of balancing the table as in earlier days. Locomotives now frequently start to swing before they have actually stopped moving on the table. Every new feature which tends to hasten locomotive movement at the terminal has the double effect of increasing locomotive utilization from the standpoint of the time that the locomotive is available for service and of increasing the capacity of the enginehouse for handling motive power. For example, the Texas & Pacific is now turning over 70 locomotives every 24 hours in a 32-stall enginehouse at its new Lancaster yard terminal near Forth Worth, Texas. Approximately 40 of these locomotives, most of which are the Texas type with 5,000-gal. boilers, are washed out and refilled daily without locomotive fires in the enginehouse. Such is the super-power terminal of today.

Progress of the Motor Transport Division

ALMOST exactly two years ago the Motor Transport Division, which is holding its second regular meeting in Atlantic City this week, had its inception in the organization of the Railroad Motor Transport Conference by a gathering of railway officers. During the two-year interval, the organization has become a full-fledged division of the American Railway Association, with an active and growing membership which is plunging enthusiastically into the work assigned to the division.

Two years ago railways all over the country had become aroused by the inroad, particularly in their passenger revenues but also to some extent in their freight revenues, made by the competition of private automobiles, motor coaches and motor trucks for traffic which formerly had been handled almost exclusively by rail. The number of automobiles in service had assumed vast proportions and their owners had become accustomed to using them in going to and from even fairly distant points. New motor coach lines, subject to a minimum of regulatory restraint, were springing up everywhere, and common carrier or contract-carrier motor trucks were handling more and more of the l.c.l. freight traffic. The situation had become one which could no longer be ignored by the railways. Something had to be done to meet this new form of competition.

Even at that time a few roads had become convinced that the proper course lay in the direction of railway operation of motor coaches and trucks, with co-ordinated schedules on the rails and on the highways and with motor vehicles supplementing or replacing railway train service. The Railroad Motor Transport Conference was organized for the purpose of making available to all the railways, who cared to take advantage of the opportunity, the knowledge of motor vehicle operation gained through experience by the pioneer railway operators of motor coaches and trucks, which they might use in the solution of their own highway competition problems.

Today the competitive situation is just as acute. More private automobiles are in service. Several thousand more motor coaches are in operation and there has been some further development of motor truck transportation. Furthermore, through extensive consolidations the organized competitors of the railways are much more formidable in size and financial strength. The railways as a whole have not stemmed the tide of losses in passenger revenue. They are still operating by compulsion many passenger trains the earnings of which do not even approach their direct operating expenses.

On the other hand, the past few years have seen the motor transport operations of the railways increase largely. More railways are operating motor coaches, motor trucks, tractors and trailers, more expensive and unremunerative trains are being replaced by motor coach and motor truck service, and in many instances the transportation service offered by the railways has been substantially increased through the operation of frequent motor coach and motor truck schedules, in an effort to recoup through the provision of better service the passenger and freight traffic which had been lost.

The Railroad Motor Transport Conference undoubtedly contributed to the spread of motor vehicle operation by the railways. Its successor, the Motor Transport Division, is expected to have a similar influence in the future. It is generally felt that the solution of the problem of providing the best transportation service without destructive competition lies in the co-ordination of the services of the railways and of the operators on the highways, whether independent companies or subsidiaries of the railways themselves. We are still far from having accomplished complete co-ordination, but rapid progress in that direction is being made. The Motor Transport Division should contribute greatly to the rapid attainment of that goal.

An Evidence of All-around Efficiency

FREQUENT comment has been made during recent years on how much longer runs the locomotive is good for than was formerly considered within the possibilities, and how much more effectively the potential capacity of the power is being utilized in other respects. In some of this comment, the part which the improving condition of the power has had in making the intensive utilization possible has come in for a share of the credit. Less attention has been given to this than to other phases of the record, however, and it is, perhaps not generally recognized what a splendid improvement in the physical condition of the motive power of the country has been made in the past four or five years—an improvement which has been accompanied by a decreasing expenditure of labor.

If we go back to the early months of 1923, at the beginning of the intensive drive to restore the motive power from the accumulation of deferred maintenance following the shopmen's strike, it will be found that more than 20 per cent of the locomotives were in or waiting shops. A year later, after the heaviest of the deferred maintenance had been taken care of, this percentage had been reduced to slightly less than 18, and for the greater part of the next two years, until the later part of 1925, it remained between 17 and 18. Then came a marked decrease in unserviceable locomotives and, by the beginning of 1926, the percentage had dropped to 15.4. A year later a still further improvement had caused the unserviceable percentage to fall to 13.8. While this low point of less than 14 per cent has not been held steadily since that time, less than half of the reporting periods since have shown a number of unserviceable locomotives amounting to over fifteen per cent of the number on line.

The remarkable fact in the record, however, is that there has been a steady, though at times, slight, declining tendency in the hours of labor expended on locomotive maintenance since 1924—a decline which has been well marked since the latter part of 1926. The measures which have brought about this highly composite result are probably almost as numerous, at least in detail, as the roads which have applied them. In the main, however, they have been directed toward better employee relations, better shop and engine terminal facilities, and better systematization of repair and servicing programs. All of these objectives have, in turn, been directed toward the establishment of a higher standard of maintenance which, once established is the cheapest standard of maintenance.

In pausing long enough to contemplate with satisfaction a job which is being well done, it should be kept clearly in mind that it is far from completed and that the possibilities of none of the measures here indicated have yet been completely exhausted.

Today's Program

Four railroad conventions will meet in Atlantic City today.

Purchases and Stores Division

The Purchases and Stores Division will convene in the Vernon Room of Haddon Hall Hotel at 9 a. m., Daylight Saving Time, and will adjourn at 1.30 p. m. The program follows:

Individual Paper—"Inspection of Materials and Supplies, Other Than Covered by Specifications," by J. P. Kavanaugh, General Storekeeper, Chesapeake & Ohio.

Address by J. Marshall, Special Representative, Freight Claim Division.

Subject 12—Purchasing Agent's Office Records and Office Organization, Including Price Index of Railroad Commodities.

Individual Papers—Annual Contest Award.

The Part Played by "Service of Supply," by James M. Day, Foreman of Stores, Southern Pacific Company.

Psychology Applied to Economical Storekeeping, by Clifton E. Oeschger, Chief Clerk Stores Department, Chicago, Milwaukee, St. Paul & Pacific.

Organization and Constant Supervision Essentials of Stock Control, by John Robert Stokes, Assistant Division Storekeeper, Illinois Central System.

Subject 16—(A) Standardization and Simplification of Stores Stock; (B) Disposition of Surplus or Inactive Materials.

Individual Paper—"The Manufacture of Concrete Products," by I. G. Morrison, Storekeeper, Chicago, Burlington & Quincy.

Subject 21—Fundamental Plan of Organization for Material and Supplies.

Subject 19—Control of Line Stocks.

Subject 3—Recovery, Repairs and Reclamation of Discarded Material—Classification, Handling and Sale of Scrap. (Illustrated by Stereopticon Views.)

Subject 13—Stationery and Printing.

Subject 15—Delivery of Material to Users. (Illustrated by Motion Pictures and Stereopticon Views.)

Mechanical Division

The Mechanical Division will be called to order in the Greek Temple on the Million Dollar Pier at 9.30 a. m., Daylight Saving Time, and will adjourn at 12.30 p. m.

Address: Interstate Commerce Commissioner, Honorable Frank McManamy.

Reports on Automotive Rolling Stock.

Individual Paper: "Power Plants for Railroads," by A. A. Potter, Dean of Engineering, Purdue University.

Report on Locomotive Design and Construction.

Moving Picture: "Operation of the Steam Locomotive"—John Purcell, Assistant to Vice-President, Atchison, Topeka & Santa Fe.

Motor Transport Division

The Motor Transport Division will meet in the Rose Room of the Hotel Traymore. Two sessions will be held, one at 10 a. m., Daylight Saving Time. The afternoon session will be called to order at 2 p. m.

MORNING SESSION

Address by R. H. Aishton, President, American Railway Association.

Report of General Committee.

Report of Motor Coach Section—T. B. Wilson, Chairman.

Discussion of motor coach problems submitted by the members.

AFTERNOON SESSION

Report of Rail Motor Car Section—R. L. Fairbairn, Chairman.

Discussion of rail motor car problems submitted by the members.

Electrical Engineers

The Association of Railway Electrical Engineers will hold its semi-annual meeting this morning at 9 o'clock in the Ozone Room on the eighth floor of the Hotel Dennis. The program is as follows:

9.00 a. m. Progress Report of the Committee on Illumination.
9.30 a. m. Progress Report of the Committee on Electric Welding and Heating.
10.00 a. m. Progress Report of the Committee on Self Propelled Vehicles.
10.30 a. m. Progress Report of the Committee on Power.
11.00 a. m. Progress Report of the Committee on Motors and Control.
11.30 a. m. Verbal Progress Report of the Committee on Train Lighting.
12.00 noon Verbal Progress Report of the Committee on Locomotive Electrical Equipment.
12.30 a. m. Verbal Progress Report of Committee on Application of Radio to Railway Service.

All of the A. R. E. A. reports, except those which will be verbal, were published in the June, 1928, issue of the RAILWAY ELECTRICAL ENGINEER, copies of which can be obtained at the RAILWAY AGE office, booth No. 1, on the pier.

Entertainment

10.30 a. m. Orchestral Concert, Entrance Hall, Million Dollar Pier.
3.30 p. m. Orchestral Concert and Impromptu Dancing, Entrance Hall, Million Dollar Pier.
9.30 p. m. Grand Ball, Ball Room, Million Dollar Pier.

Cornell Alumni Dinner

THE customary meeting of Cornell alumni attending the A. R. A. conventions will be held at 7.00 P. M., on Friday, in the clubroom of the Traymore Hotel. L. Richardson, mechanical superintendent of the Boston & Maine will act as chairman. All Cornell alumni wishing to attend are requested to leave their names with the secretary, A. F. Stuebing, at The Bradford Corporation booth No. 554, or at the Hotel Brighton.

In Memoriam

THE ranks of the Purchases and Stores Division were reduced by the loss through death of six of the members during the past year, according to the announcement of the General Committee in its report yesterday. The deceased are:

Thomas O. Wood, purchasing agent, G. C. & S. F.
W. F. Naumann, division storekeeper, I. C.
J. H. Cragin, general storekeeper, L. A. & S. L.
F. G. Prest, retired director of purchases, N. P.
E. P. G. Harte, assistant purchasing agent, S. A. L.
W. R. Ormsby (life member).

Life Memberships in Division VI

THE report of the General Committee of the Purchases and Stores Division, presented yesterday, contained the announcement that four of its staunch members had been awarded life memberships in the association. These members are:

J. H. Waterman, retired superintendent of timber preservation, C. B. & Q.

R. J. Elliott, retired director of purchases, N. P.

Samuel Porcher, retired assistant vice-president, P. R. R.

W. G. Phelps, retired purchasing agent, P. R. R.

While Mr. Waterman and Mr. Porcher have retired from active railway service, they have continued their work with the association and are both present this year to address the convention. Mr. Porcher is remembered as one of the most delightful personalities that ever graced a purchasing department of a railroad. He reached the age of 70 years on December 21, 1927, after

nearly 46 years in railway service, having entered the Altoona machine shops of the Pennsylvania as an apprentice on January 27, 1882, where he completed a full shop course, including the test department. He was appointed assistant purchasing agent of the Pennsylvania in 1894 and became purchasing agent in 1913. In January, 1918, immediately after the government took over the operation of the railroads for war purposes, he was called to Washington to assist in organizing the purchasing department of the Railroad Administration. During his 34 years of service in the purchasing work of this road, he was the counsellor to many railway officers in the early development of purchasing activities in various parts of the country, and has been a guiding spirit to the Purchases and Stores Division particularly in its study of fuel handling and conservation.

Mr. Waterman was retired on September 1, 1927, at the age of 74, after serving nearly 47 years in the service of the Chicago, Burlington & Quincy, 46 years of which were spent in the stores department, where he won distinction for his pioneering in the field of wood preservation, and where he became the seer and philosopher for the younger storekeepers, not only on that road, but throughout the country. He was president of the American Wood Preservers Convention in 1915 and was president of the Railway Storekeepers' Association in 1911. Since that time he has continued his interest in the affairs of the Purchases and Stores Division and has the distinction of being as greatly in demand on every program of this group as Mr. Aishton and Mr. Besler.

Mr. Phelps started his career as a telegraph operator and first appeared in the purchasing work in 1913 as assistant purchasing agent on the Vandalia Line. He also served under the Railroad Administration and was one of the Eastern Regional Purchasing Committee before his return to the Pennsylvania as purchasing agent of the Lines west of Pittsburgh. Mr. Phelps was a member of the General Committee of the Purchases and Stores Division for the first seven years of its existence.

Though not so widely known, Mr. Elliott commands the respect of his associates for his close application to his work and for the integrity with which he administered the office of purchasing agent and subsequently director of purchases on the Northern Pacific. It is a source of much regret that he has been compelled to retire by eye trouble which has almost deprived him of his sight.

Breaks in the Ranks of the Mechanical Division

In its report read at Wednesday's session of the Mechanical Division convention, the General Committee reported the death during the year of 12 members. One of the most recent deaths was that of A. Kearney, superintendent of motive power, Norfolk & Western, which terminated an active service in the ranks of the Mechanical Division, a lack of which has been acutely felt during the present convention. Another member whose death early this spring deprives the division of the services of an eminent engineer long active in the scientific study of problems of locomotive design and performance, is Dr. W. F. M. Goss, who died on March 23. The complete list of the members whose deaths were reported by the General Committee follows:

Bentley, L. L.	Armstrong Cork Company
Cutler, T. J.	Mech. Supt., Northern Pacific, Apr. 25, 1928
Dow, J. M.	403 W. Market St., Lima, O., Dec. 3, 1927
Goss, W. F. M.	Barnstable, Mass., Mar. 23, 1928
Hiltabidle, J. C.	Supt. Trans., Buffalo Creek & Gauley, Mar. 26, 1927
Kearney, A.	S. M. P., Norfolk & Western, May 18, 1928
Lanza, G.	5624 Cedar Ave., Philada., Pa., Mar. 21, 1928
Mauk, E. L.	M. M., Tennessee Central, July 17, 1927
Milliken, J. M.	C. E. C., Gulf Refining Co., Mar. 3, 1928
Naylor, F.	M. M., Mississippi Central, May 28, 1927
Swanson, C. N.	Matls. Insp., A. T. & S. F., Aug., 1927
Waldo, B. M.	Chf. Inter. Inspector, Dallas, Texas

Railroad Reservations

THE ticket office for railroad transportation and Pullman reservations has been established in the Western Union telegraph office near the entrance to Marine Hall. It is expected that there will be a special train for Chicago on the Pennsylvania Railroad, leaving around 3.30 o'clock on the afternoon of June 27. At this writing no confirmation has been received, but a definite announcement of the leaving time will be made later.

Railway Club Secretaries' Meeting

THE Society of Railway Club Secretaries will hold its customary meeting at 10.00 a.m., Thursday, at the Marlborough-Blenheim Hotel, and at 1.00 p.m., with invited guests, will have a roundtable luncheon at the Marlborough-Blenheim Hotel. Acceptances this year indicate attendance of the secretaries of nearly every railroad club.

Reading to Take Over Shore Coach Line

THE Reading Transportation Company, highway subsidiary of the Reading Company, will about July 1 take over Shore Services, Inc., the motor coach line from Atlantic City down the Jersey coast to Wildwood and Cape May. Ten Macks built to Reading "Club Coach" specifications will be utilized in this service.

The Reading began its first motor coach operations on April 29 last, after winning a two-year fight for authority for such operations in Pennsylvania. Since that date its highway service has been rapidly expanded. Shore Services, Inc., were acquired by purchase some weeks ago and plans now being made for taking over the line follow the authorization of transfer of ownership, granted last week by the New Jersey Public Utility Commission.

Registration Figures

YESTERDAY'S complete registration figures up to 3.00 p. m.., for the first day, totaled 3,826, as compard with a total of 4,105 for the first day of 1926, up to 4.00 p. m. Below are comparative first-day figures for 1920, 1922, 1924, 1926 and 1928:

	1920	1922	1924	1926	1928
Mechanical, Division V	355	360	435	600	450
Purchases and Stores, Division VI	9	13	8	330	318
Motor Transport, Division VIII					13
Railroad guests					32
Railroad ladies	251	148	337	450	549
Supply men	1517	1140	1676	2050	1837
Supply ladies	354	281	380	500	434
Special guests	102	107	182	175	16
Complimentary					177
Total	2588	2049	3018	4105	3826

Pennsylvania Orders Oil-Electric Cars

WORD has been received that the Pennsylvania Railroad has placed an order for two 330-hp. oil-electric rail cars. The bodies will be built by the Pullman Car and Manufacturing Corporation and the oil-electric equipment was ordered from the Westinghouse Electric & Manufacturing Company.

The power plant will consist of a Westinghouse-Beardmore six-cylinder, vertical, four stroke cycle, high-speed oil engine direct-connected to a 600-volt direct-current generator. Two type 569-C-4 traction motors will be used on each car. The control equipment will incorporate the torque governor system of automatic regulation. These two cars constitute the first order placed by any railroad in the United States for oil-electric rail cars of all American manufacture.

Grand Ball Tonight

AT 9:30 tonight, in the Ball Room on the Million Dollar Pier, the Grand Ball of the week will be held. The event will be held in honor of Divisions V and VI, American Railway Association, and the newly organized Motor Transport section. A large attendance is expected inasmuch as this will be the important social function of the week. It is announced that the guests of honor will be G. E. Smart, chairman of Division V; A. S. McKilligon, chairman of Division VI; and A. P. Russell, chairman of the Motor Transport section. An added feature of the grand march, now an historical institution on this gala occasion, will be the four gorgeously arrayed Herald trumpeters especially engaged for the event.

Life Members of Mechanical Division

There are 22 names on the list of those who have been made life members of the Mechanical Division during the past year, which was presented in the report of the General Committee at Wednesday's session. With one exception, these men became life members because of a membership in the Mechanical Division, or one of its two predecessor organizations, of 20 years or over, as set forth in the rules of order of the division. The exception is L. K. Sillcox, assistant to the president, New York Air Brake Company, whose membership dates back to 1916. The special honor is particularly fitting in his case, however, because of his service to the division in the capacity of chairman last year, a service which was terminated when he left railroad work to enter his present duties. The names of the new life members are as follows:

Date Joined	Name	Title and Railroad
1908	Beamer, J. A.	(Retired) St. Petersburg, Fla.
1908	Bosenbury, J. M.	S. M. P. & E., Illinois Traction Sys.
1908	Cahill, W. W.	Supt., Tonopah & Tidewater
1908	Craig, James	Supt. Car Maint., Boston & Maine
1908	Foster, O. M.	(Retired) D.S.M.P., New York Cent.
1908	Fritts, J. C.	(Retried) 218 Wheeler Ave., Scranton, Pa.
1908	Goodnow, T. H.	Vice-President, The Camel Co.
1908	Grimshaw, F. G.	Works Manager, Pennsylvania
1908	Gross, E. G.	M. M., Western Ry. of Alabama
1908	Hess, G. F.	S. M. P., Wabash
1908	Irvin, I. B.	M. M., Pitts., Shamut & Northern
1908	Kinter, D. H.	Gen. Fore. Car Dept., Monongahela
1908	Marea, M.	Asst. Genl. Mgr., Minnesota Western
1908	McCarthy, T. W.	M. M., Chicago, Rock Island & Pac.
1908	McDonald, H. M.	Genl. Mgr., Washington Run
1908	New, W. E.	M. M., Kansas City Terminal
1908	Schmoll, G. A.	Supv. Loco. Main., Baltimore & Ohio
1908	Schulze, R. W.	Plant Supt., Fruit Growers Exp. Co.
1916	Sillcox, L. K.	Chf. Mech. Off., Chesapeake & Ohio
1908	Small, J. W.	Asst. to Pres., New York Air Brake Co.
1908	Wall, H. S.	Mech. Supt., Atch., Top. & Santa Fe
1908	Young, C. D.	Genl. Pur. Agt., Pennsylvania

Exhibits

THE following information has been obtained concerning the exhibits which was not included in yesterday's *Daily*.

International Trade Press, Brooklyn, N. Y.—Trade publications. Represented by A. M. Shapiro, J. Fogel, Charles Monahan and Charles Reeves. Space 722.

Standard Oil Company of New York, New York.—Reception booth. Represented by Col. J. E. McNary, I. D. Fox, John E. Ferry and I. W. Westley. Space 761.

Truscon Steel Company, Youngstown, Ohio.—Standardized buildings (Marine Hall); double hung, casement, factory, basement and architectural projected windows; steel poles for transmission structures; foundry flasks; steel platforms and boxes; pressed steel stampings; floor joists; metal laths; steel industrial doors; re-inforcing mesh curb bars; expansion joints and steel forms for concrete roads. Represented by C. I. Auten, A. L. Brown and Oscar Loew. Space 778.

In the article describing the exhibit and listing the exhibitors, which appeared in Wednesday's *Daily*, the Joseph Dixon Crucible Company was shown as occupying space 612. The space number is incorrect and should have been shown as 24.

Motor Transport Committees Meet

THE recently appointed members of the Motor Coach, Motor Truck and Rail Motor Car Committes of the Motor Transport Division, had their first meeting with the chairmen of their respective sections at the Traymore yesterday. T. B. Wilson, vice-president and manager of the Southern Pacific Motor Transport Company and chairman of the Motor Coach Section, called the members of his committee together at 10 o'clock in the morning, while G. C. Woodruff, assistant freight traffice manager of the New York Central and chairman of the Motor Truck Section, and R. L. Fairbairn, manager of the passenger service bureau of the Canadian National and chairman of the Rail Motor Car Section, met with their committees after luncheon.

Western Locomotive Engineers Receive Increase

RAILROADS in western territory on June 19 signed an agreement with the Brotherhood of Locomotive Engineers granting some 22,500 enginemen a wage increase of six and one-half per cent. Under this agreement the weights on trailing wheels and tender trucks equipped with boosters will be added to the weight on locomotive drivers in order to obtain the weights for the respective classes of service. The agreement is retroactive to May 1, 1928, and dissolves an agreement to arbitrate the employees' demands for a 15 per cent increase which was signed on May 21. Representatives of the four train service brotherhoods on the Kansas City, Mexico & Orient, meeting at Wichita, Kan., on June 15, decided that pending the approval of the acquisition of that railroad by the Atchison, Topeka & Santa Fe the proposed strike for higher wages would be postponed indefinitely.

Safety Medal Award Committee

THE Harriman Memorial Medal Award Committee of the American Museum of Safety, of which Arthur Williams, president of the Museum of Safety, is chairman, will meet at the Traymore Hotel, Atlantic City, today to decide upon the awards to be made to the railways making the best safety records in 1927. Other members of the committee are R. H. Aishton, president of the American Railway Association, John J. Esch, former Interstate Commerce commissioner, and Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, and Samuel O. Dunn, Editor-in-Chief of the *Railway Age*.

Yesterday's Entertainment

THE entertainment features of yesterday were pleasing. An orchestral concert in Entrance Hall, Million Dollar Pier, was enjoyed by the music lovers. In the same hall at 3:30 in the afternoon there was dancing.

At 9:30 in the evening, at the same place, an informal ball was given. The Joseph N. Ferko prize winning string band furnished the dance music; another special feature was the singing of the Pennsylvania Railroad Keystone Quartette. The following were in charge of the informal dance: L. R. Pyle, chairman; J. J. Cizek, vice-chairman; L. A. Carpenter, H. E. Passmore, C. L. Mellor, E. E. Thulin, F. E. Symons, K. F. Sheeran, H. O. Fettinger, J. C. Campbell, F. C. Carter, G. L. Gordon and C. T. Ressler.

Additional Information on Locomotive Track Exhibit

IN addition to the locomotives described in Wednesday's Daily Edition of the *Railway Age*, the Reading Company is showing one of its heavy Pacific type locomotives, No. 201. This locomotive, which was built by the Baldwin Locomotive Works, has been in passenger service between Philadelphia and Pottsville, hauling 10 to 14-car trains.

The cylinders of this Pacific type locomotive are 25 in. by 28 in.; the driving wheels, 74 in., and the boiler pressure, 220 lbs., which gives a rated tractive force of 44,200 lb. The total weight of the locomotive is 288,120 lb., of which 177,210 lb. is on the drivers. The total heating surface is 4,200 sq, ft. and the grate area, 94.5 sq. ft.

Among the equipment details used on this locomotive are the Sellers exhaust steam injector; Economy gravity feed flange oiler; Royal brake beam regulators, Type F, on the tender; and Allan Wood A. W. Diamond pattern rolled steel floor plates for cab and deck.

The locomotive is most attractively finished in blue lacquer, with gold stripes and presents a very striking appearance.

Union Pacific 4-12-2 Type Locomotive

In the description of this locomotive in the June 20, Daily Edition of the *Railway Age* the statement was made that locomotive No. 9015 was one of a lot of 15 built for the Union Pacific, which was not strictly correct. The fact of the matter is that the original order for one locomotive was followed soon after by a second order for fourteen. The last order was for 23 locomotives, of which No. 9015 is the first. The total locomotives of this class on the completion of the present order, will be 38.

Features not mentioned in the previous description which are of particular interest include the use of over 200 Alemite connections for oiling shoes and wedges, valve motion work, spring rigging and other parts. SKF bearings are used in the transverse lever of the three-cylinder valve motion. The tenders used on this lot of locomotives are larger than those used on the previous orders, the water-carrying capacity having been increased from 15,000 gallons to 18,000 gallons, and the coal capacity from 21 tons to 23 tons.

Dump Cars Ordered

The Missouri-Kansas-Texas has ordered 10 dump cars from the Western Wheeled Scraper Company.

C. & A. Motor Coach Line

THE Illinois Commerce Commission on June 19 granted the Alton Transportation Company, a subsidiary of the Chicago & Alton, permission to operate motor coaches between Joliet, Ill., and Carlinville, about 185 miles.

Illinois Central Edgewood Cut-Off

AUTHORITY was granted to the Illinois Central by the Illinois Commerce Commission as of June 19, to operate the recently completed Edgewood cut-off between Edgewood, Ill., and Fulton, Ky., in intrastate commerce. This decision by the commission disposes of long standing protests of certain communities in southern Illinois and northern Kentucky on the main line of the Illinois Central, which held that the cut-off would deprive them of adequate train service.

Supply Officers Promoted

DURING the twelve months period since the last annual meeting of the Purchases and Stores Division, several men have been advanced to higher positions on the railroads they serve. Included among the more prominent among them is H. R. Duncan who was advanced from traveling storekeeper of the Chicago, Burlington & Quincy to superintendent of timber preservation, succeeding J. H. Waterman, upon the latter's retirement.

B. W. Griffith, general storekeeper of the Michigan Central, was advanced to general storekeeper of the lines east of the New York Central and was succeeded on the Michigan Central by A. M. Gage. On the Union Pacific Lines, Frank E. Cragin was appointed general storekeeper of the Los Angeles & Salt Lake to succeed his father upon the latter's death.

W. M. Portlock, general storekeeper of the Seaboard Air Line, was advanced to purchasing agent. C. C. Kyle, general storekeeper of the Northern Pacific and vice-chairman of the Purchases and Stores Division, is now purchasing agent. William W. Morris, chairman of this year's Committee on Fire Prevention, has been advanced from assistant general storekeeper of the Reading to general storekeeper. John H. Nichols, general storekeeper of the Nickel Plate district of the New York, Chicago & St. Louis, was made general storekeeper of the system and Frank Austin, general storekeeper of the Boston & Albany when the last convention met, is now purchasing agent of that road.

Mechanical Division Meets

Chairman Smart Calls Convention to Order—
R. H. Aishton Addresses Delegates

THE ninth annual meeting of the American Railway Association, Mechanical Division, opened in the Greek Temple on the Million Dollar Pier shortly after 9.30 a. m. yesterday. The meeting was called to order by G. E. Smart, chairman of the division and chief of car equipment of the Canadian National. The Rev. Thomas S. Brock, of St. Paul's Methodist Episcopal Church, Atlantic City, delivered the invocation. This was followed by an address by R. H. Aishton, president of the American Railway Association.

Address by R. H. Aishton

A tribute to the Mechanical Division—Transportation problems are requiring more and more co-ordinated action

It is a pleasure to come here, if for no other reason than to pay a tribute on behalf of the executives of the railroads, whom I aim to represent at an occasion of this kind, in conveying their appreciation to you of the great work that your division has been carrying on, particularly for the last few years.

I do not like to individualize but I think it is only due the gentlemen who have been so active in the work of this Association; in the statesmanship work, if you please, of this Association, to say to you that in my judgment the work done by these gentlemen as past presidents of this Association, the work done by Mr. Smart, your chairman, and particularly the work done by the chairmen and the members of your committees. If I were going to pick out committees that had been prominent in that kind of work in the last year, your committee on Safety Appliances, of which Mr. Chambers is chairman, and your committee on Car Couplers, of which Mr. Kleine is chairman, have done work that in my opinion has brought about a better situation on the railroads which money cannot buy.

I know that in convention work and in work of an Association, there is very little knowledge as a general thing of the great bulk of the accomplishments among the members. They vote for resolutions and take part in the discussions and all that kind of thing, but when you come to an estimate of what is being actually accomplished through your elected representatives, they will not tell you, so I made up my mind I would come here and tell you myself my estimate of it.

While I am passing around compliments—I always forget them generally, when I go to make a talk—I just want to say a word about this wonderful exhibit you have here. I think that Mr. Bateman, his Executive Committee and the members of the Supply Association, have more than excelled themselves in this exhibit, and I believe you have today here in Atlantic City one of the greatest expositions of railroad appliances that has ever been gotten together in this world. I happen to know something about some of the expositions abroad. They had a big one over at Wembley in England a couple of years ago. It was a worldwide exposition, and yet, when it comes to the things you gentlemen are interested in, what they had over there would not fill one part of this exhibit.

The Railroad Situation

Now, I want to talk to you just a minute about the railroad situation. You are always interested in the railroad situation. In the last eight years the railroads have made tremendous progress. I am not going to repeat what I told you the last time I was here, but they have continued that work, and the last eight years—the last six years particularly—is really an epic of performance in transportation. You have practically revolutionized the transportation system in this country.

From outward appearance, in the minds of the public,

everything is all right. They are getting the best service they ever had in their history. They are getting quicker service, better service, more adequate service, and everybody is saying everything is all right, things are going fine, and they have great appreciation of the railroads, and all that kind of thing. But there are some other factors that are not so prominent, and that you people here in this convention and in your work have not only a very direct interest in, but you also have in your hands and in your heads the things that will help to solve those problems.

What are those problems? One of the first things is the apprehension regarding the constantly decreasing revenue of the railroads. Take the year 1927. I think the figures will show that the net revenue, that is, what is left after you have gotten through with all your operations, showed a less average return than any time in the last twenty years, outside of the war period.

And yet, with all the public acclaim about service, with the public satisfaction regarding service, we find the constant pressure and the constant tendency is toward lower rates. We have in addition brand new forms of transportation. We have motor transportation with free roads, all that kind of thing. We have air transportation. At the time I wrote this memorandum I said that from America to Europe the time had been reduced to a little over a day. Since I wrote that memorandum in this week, a woman has flown from America to Europe in twenty hours and forty-nine minutes.

What is going to happen next week, next month, next year? None of us know. But whatever may happen, and whatever conditions we have to meet, it is up to you gentlemen to find part of the answer. We have waterways and inland water transportation operated by the government. The railroads are not opposing these things, and the railroads have not offered a word of opposition to any of the other forms of transportation. All they ask is that the competitive basis be on a fair foundation. Why? Because if that form of transportation is what the public wants, and if it is in the public interest, the railroads are for it. But they ought so to shape their affairs as to get the greatest amount of advantage for the rail transportation, which after all has got to be the backbone of transportation in this country, by going into these matters, by investigating them, by co-operating or co-ordinating or doing whatever other thing may be necessary, adopting them if necessary, in order to furnish the public transportation which it is bound to have—the most efficient, the fastest and the cheapest.

Now, those are some of the problems we have got to look at, and I came down here today to leave this thought with you: There are too many of us—and I was one of them, I had been through it—there are too many of us who lose sight of one important thing there is in connection with transportation, and that is the side of the statesman. It is a mighty fine thing that at least once a year you gentlemen of the railroads forget your little trials and tribulations on your own railroads, if you please, and in addition to developing things that may be of benefit to your own railroad, that you sit down here for a week and go over these matters to determine what is the thing that will not only benefit your own railroad individually, but will benefit the entire railroad situation. And it is from that viewpoint that in what lies ahead of us you are going to get effective action—the ability of you men to subordinate self for a moment and figure out what is best for the transportation industry and for the American people.

I think that is about all the message I have, Mr. Chairman. I have confidence in the future in your hands. This is not only the ninth anniversary of the Mechanical Division, but it is the sixtieth and the sixty-first anniversary, respectively, of the Master Car Builders and the American Railway Master Mechanics Association, and the same wisdom and the same energy and the same statesmanship that has brought your branch of the business from the Puffing Billies and the Tom Thumbs up to the Mountain types and the Mikados and the Pacifics and the Santa Fe today, continued, is what is going to meet these problems.

There is no one, none of us, has a greater interest in what is being done than the government itself. We are apt to say "keep the government out of business" and all that sort of thing, but nevertheless the regulating body down there at Washington is watching what we are doing with great interest. If you want to keep the government out of business, the best remedy is to do the job yourselves. It is one of the most encouraging things I know of that the Honorable Commissioner, Mr. McManamy, will leave his duties down there, which I know are overwhelming all the time, and come up here for the purpose of getting in touch with you, advising with you, and ascertaining what is going on in this important branch of the railroad business.

I will leave this word with you, Mr. Chairman and gentlemen: that the American Railway Association, and when I say that, I mean the presidents and executives of these railroads—and I know it, because I met here with them last week—believe in what you are doing, wholeheartedly, and if they or I or any of us can do anything to help you in the work of your division, all you have got to do is command us.

Members of the General Committee of the Mechanical Division

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Address of Chairman Smart

You may have noticed that I emphasized the ladies, and that reminds me of a note I received recently from one of my brother officers who said, "Just as sure as safety appliances are required for the successful operation of locomotives and cars, so it is necessary to bring the ladies with us for the success of the convention." Ladies, now that you know you are welcome, I am going to impose a duty upon you, and that is, to start you husband off promptly on time each morning, that we may be able to get an early start as we have a good program of work outlined for each day.

It is a great pleasure to see so many assembled here this morning whose interests are devoted to the proper maintenance of our railroad equipment, and I am sure we are all glad to be here again to take up the work of the division in as thorough a way as possible.

I wish to congratulate the Railway Supply Manufacturers' Association for the splendid exhibits it has prepared, and arrangements that have been made to show the latest devices and appliances manufacured by them. The extension made to the pier this year will make it more convenient for the members to see these appliances than was possible two years ago. We should take every opportunity to examine them.

What appeals to me today, is the wonderful foundation that was laid in starting the Mechancial Division by the old Master Mechanic's and Master Car Builders' Associations. When we consider that it was over 60 years ago that this foundation was laid on good solid ground, great credit is due to those pioneers who started this organization. We are all benefitting today by the foresight they had of the future, and we must realize what chaotic condition there would be to try and handle the railway business of this North American continent, unless we had this clearing house for different ideas, and respect for the rules, standards and regulations as laid down by this division. The membership at the present time includes 208 railroads, representing 404 memberships in the American Railway Association, and in addition thereto, 214 railroads that are associate members of the American Railway Association. I consider that the bringing together in an association like this of mechancial officers and other employees of the railroads, is a great asset to the industry.

Consider the progress made in the mechancial departments with respect to improved types and designs of locomotives, and extension of their runs. It is nothing unusual now for locomotives to run from 500 to 800 miles or more between terminals, and the outstanding feature, without doubt, is the increased serviceability and utilization of the locomotive. See what economies are effected by extending these runs and reducing the fuel costs; also the greater tonnage hauled by the modern type of locomotive per train at increased speed, giving a service which a few years ago would be considered express service. Modern cars have been designed of sufficient strength to meet these heavy service conditions with an increased capacity of two or three hundred per cent. more than the older types of car, without the same ratio increase in dead weight. Better shop practices have been followed in maintaining locomotives and cars, making it possible to operate successfully under these improved conditions. Notwithstanding this, the mechancial departments have also given careful consideration to economy, and the maintenance ratios are lower than they were a few years ago on the majority of railroads.

Officers of the Mechanical Division

However, we must not be content to rest on our laurels now. In the future it will require still greater effort on our part to obtain further improvements in our equipment, and if possible reduce our maintenance costs without affecting the service.

The various committees have been active during the past year, and many of our members who are on these committees have devoted a great deal of time to this work. There have been some hard questions to settle, and the chairman of the various committees are to be congratulated upon the splendid work done by their committees. Their work lies at the root of the success of the mechancial division.

For the first time we have with us, this year at Atlantic City, a new member of the American Railway

Association; namely the Motor Transport Division, which held its first meeting, under the auspices of the American Railway Association, at Chicago in January, 1927. This division, which has representatives from all branches of the railway service, has three main sections—the motor coach, the motor truck, and rail-motor cars. The motor coach and motor truck sections will deal with all questions of many nature whatsoever in connection therewith, but the work of the Rail-Motor Car section will be confined principally to transportation and traffic. Purely mechanical questions will be looked after by a committee appointed by the Mechanical Division.

The Purchase and Stores Division convention affords a splendid opportunity to talk over some of the questions the mechanical departments have in connection with the purchase of material and stores stock.

Invitation Extended to the Interstate Commerce Commission and Canadian Board of Railway Commissioners to Attend the Conventions

An invitation was extended to representatives of the Interstate Commerce Commission to attend our meetings, and the Honorable Frank McManamy, Commissioner, Interstate Commerce Commission, has consented to address us on June 21. Mr. McManamy's talks to us have always been interesting and instructive, and we are always pleased to see him present at our convention. We will also have an address from A. G. Pack, Chief inspector, Bureau of Locomotive Inspection, Interstate Commerce Commission, on June 22. With the experience Mr. Pack has had in locomotive inspection, it is a great pleasure to the many friends he has made, to have him come and say a few words at our meetings. We have also been fortunate in obtaining W. P. McCracken, Jr., Assistant Secretary of Commerce for Aeranautics, to address us. This is a very live subject at present and I feel sure that we will have an instructive talk on the relation of air and rail transportation. An invitation has also been extended to the Board of Railway Commissioners of Canada, to send representatives to attend this meeting.

We are always glad to have representatives from both these commissions to sit in with us, and hear the discussions that take place. I am sure it creates a better understanding and, as chairman, I extend to them a hearty welcome.

In closing my remarks let me say to you that I appreciate the valuable assistance I have received from the vice-chairman, members of the general committee and our secretary. I hope that each one of you will enter into the work of the Mechanical Division whole heartedly, and that we have a good discussion on the reports of the various committees.

Report of Mechanical Division General Committee

Many activities engaged in during the present year—
Membership 422 roads and 2,333 persons

Since the last annual meeting, the General Committee has held meetings on November 16, 1927; March 1, 1928; and June 19, 1928.

The membership of the division at the present time includes 208 railways, representing 404 memberships in the American Railway Association, and, in addition thereto, 214 railroads, associate members of the American Railway Association.

These railroads, members and associate members of the American Railway Association, have appointed 1,171 representatives in the Mechanical Division.

In addition there are 979 affiliated members and 183 life members in the division.

The last session of the division was held June 7-10, 1927, inclusive. Since that time, the General Committee has taken action on several important subjects. This action is outlined in the following report, and your approval is respectfully requested.

The proceedings of the 1927 annual meeting have been printed and distributed to the members. Recommendations from committees received at the 1927 annual meeting and ordered submitted to letter ballot of the members, were sent to the members in the usual form and the result announced by circular.

The revisions of and additions to the Manual of Standard and Recommended Practice account of recommendations of committees at the 1927 annual meeting as approved by letter ballot have been issued in the form of looseleaf pages to be inserted in the manual.

The recommendations of the Arbitration Committee and the Committee on Prices for Labor and Materials, approved at the 1927 Annual Meeting, were incorporated in the rules and interchange, some by supplement issued August 1, 1927, and some in a reissue of the rules effective January 1, 1928.

Periodical Repacking of Journal Boxes

The provision in Interchange Rule 66, making car owner responsible for the cost of periodical repacking of journal boxes approved in the report of the Arbitration Committee at the 1926 annual meeting, was considered by your committee and the effective date extended to May 1, 1927, in the interchange rules issued January 1, 1927. This effective date was next extended to May 1, 1928, as announced in circular No. D. V.-505 and has since been extended to January 1, 1929, as announced in circular No. D. V.-566. These extensions have been made to enable car owners to complete attention to their own equipment and also to enable action to be taken with respect to revision of the present recommended practice for packing of journal boxes as will be recommended by the Committee on Lubrication of Cars and Locomotives.

Loading Rules

The recommendations from the Committee on Loading Rules, considered at the 1927 annual meeting and approved by letter ballot of the members, were incorporated in a supplement to the rules issued, effective January 1, 1928. In addition, upon recommendation from the Committee on Loading Rules, a supplement to the rules was issued, effective June 15, 1928, covering certain modifications. These modifications were all developed with the co-operation of the shippers and were felt to be of sufficient importance to be made effective immediately without awaiting the usual letter ballot action.

Tank Car Specifications

The tank car specifications containing revisions approved by letter ballot in 1926 have not been reissued for the reason that the Interstate Commerce Commission is issuing specifications covering the tanks of such cars used for transporting dangerous commodities. It was felt advisable to wait until the Interstate Commerce Commission's specifications were issued before issuing the American Railway Association specifications, so there would be no conflict. The Committee on Tank Cars will cover this subject in its report this year.

Mechanical Inspection Department

The mechanical inspection department of the division has continued, through the year, making investigations covering repairs to foreign cars and billing therefor. Where definite overcharges have been found as a result of these investigations, refunds have been made to the car owners, in accordance with the billing regulations of the association.

Extension of Effective Dates of Rules and Regulations

As occasion has arisen during the year, your committee has, upon recommendation from proper committees of the division, extended the effective dates of certain provisions of the rules and regulations of the division. These extensions have been covered by circulars isued to the members.

Joint Investigation of Tank Car Appliances and Devices

In co-operation with the American Petroleum Institute and the American Railway Car Institute, D. V. Stroop of the United States Bureau of Standards was employed for a limited time to conduct tests and investigations of tank car appliances and devices. The report of this investigation will be included in report from the Committee on Tank Cars.

1928 Annual Meeting

In accordance with policy established several years ago, the 1928 annual meeting will be held in connection with exhibit under the auspices of the Railway Supply Manufacturers Association. At the same time will be meetings of the Purchases and Stores Division and the new Motor Transport Division of the American Railway Association. The supply association has arranged the largest and finest exhibit of railway machinery, devices and equipment yet assembled for the instruction of your association, including a large exhibit of highway buses and trucks. The members are urged to inspect these exhibits carefully.

Rule 112—Settlement for Rebuilt Cars

The committee, in its report last year, advised the members of the complaint filed by the Bangor & Aroostook relative to the rules of the association governing the settlement for cars destroyed and of the arrangement made for defending the rules before the interstate commerce commission. This hearing was held, and the commission found that Rule 112 for the present was unreasonable, and that for the future a rule which provides for settlement for cars in Classes A to D on basis of 80 per cent of reproduction cost new, less depreciation from date rebuilt, cars of Classes E-1 and E-2 on basis of 70 per cent of reproduction cost new, less depreciation from date rebuilt, and cars of Classes E-3 and E-4 on basis of 60 per cent of reproduction cost new less depreciation from date rebuilt, would be reasonable.

The commission did not enter an order, but stated that the Association would be expected to modify its rules to comply with the foregoing.

The special Committee on Rebuilt Cars together with the Arbitration Committee and the complainants in this case have revised Rule 112 in accordance with the findings of the interstate commerce commission and the revised rule has been submitted to the railroad executives for approval to be effective July 1, 1928.

Inside Door Protection

The review of commodities requiring inside door protection and formulation of rules and specifications for loading commodities not requiring door protection, in conjunction with the Transportation Division, has been concluded insofar as can be done without securing the approval and support of the shippers themselves, and with the object of securing such support from the shippers as will serve to make the rules effective with as little objection as possible, the rules as finally approved for issuance will also be submitted to the various Shippers Advisory Boards for their co-operation and suggestions through their Commodity Committees.

Rules for Car Hire Settlement, I. C. C. Docket No.17801

The hearings in this case have been concluded and the parties to this proceeding have been given until July 1, 1928, in which to file briefs.

Damage to Track Devices Due to Brine Drippings from Refrigerator Cars

A sub-committee has been appointed to study this subject and arrangement is being made for co-operation with a similar committee of the Engineering Division.

Metric System of Weights and Measures

A sub-committee consisting of W. L. Bean, chairman; M. F. Cox and A. H. Fetters has been appointed to co-operate with a similar committee of the Engineering Division to combat legislation making the metric system the standard of the country.

Nominating Committee

The committee recommends that no ballot be taken for this year for members of the Committee on Nominations. It is recommended that the present committee be continued.

The Committee on Nominations consists of the following:

F. W. Brazier (chairman), assistant to general superintendent motive power and rolling stock, New York Central, New York, N. Y.; J. J. Hennessey, assistant master car builder, Chicago, Milwaukee, St. Paul & Facific, Milwaukee, Wis.; C. E. Chambers, superintendent motive power and equipment, Central Railroad of New Jersey, Jersey City, N. J.; John Purcell, assistant to vice-president, Atchison, Topeka and Santa Fe, Chicago; T. W. Demarest, general superintendent motive power, Western region, Pennsylvania, Chicago.

The report is signed by G. E. Smart (chairman), chief of car equipment, Canadian National; A. R. Ayers (vice-chairman), general manager, New York, Chicago & St. Louis; C. E. Chambers, superintendent motive power and equipment, Central Railroad Company of New Jersey; C. F. Giles, superintendent machinery, Louisville & Nashville; E. B. Hall, superintendent motive power and and machinery, Chicago & Northwestern; J. E. O'Brien, chief motive power and equipment, Seaboard Air Line; John Purcell, assistant to vice-president, Atchison, Topeka & Santa Fe; J. S. Lentz, master car builder, Lehigh Valley; J. A. Power, superintendent motive power and machinery, Southern Pacific Lines in Texas & Louisiana; O. S. Jackson, superintendent motive power and machinery, Union Pacific; F. H. Hardin, assistant to president, New York Central; S. Zwight, general mechanical superintendent, Northern Pacific; A. G. Trumbull, chief mechanical engineer, Erie; R. L. Kleine, assistant chief motive power, Pennsylvania, and W. L. Bean, mechanical manager, New York, New Haven & Hartford Railroad.

Discussion

Mr. C. E. Chambers (C. N. J.): I move the report be received.

(*The motion was seconded and carried.*)

Report of Committee on Nominations

The terms of office of the chairman, vice-chairman and eight members of the General Committee expire June, 1928.

In accordance with Section 7 (a) of the Rules of Order of the division which provides that officers of the division shall be elected at the regular meeting held in June of each even year, your Committee on Nominations nominates the following for the offices of chairman and vice-chairman:

For chairman—Term expiring June, 1930: G. E. Smart, chief of car equipment, Canadian National.

For vice-chairman—Term expiring June, 1930: A. R. Ayers, general manager, New York, Chicago & St. Louis.

As the terms of seven members of the General Committee expire in June, 1928, your Committee on Nominations nominates the following to serve until June, 1930, as members of the General Committee: C. E. Chambers, superintendent motive power and equipment, Central Railroad of New Jersey; C. J. Bodemer, acting superintendent machinery, Louisville & Nashville; E. B. Hall, superintendent motive power, Chicago & North Western; J. E. O'Brien, chief of motive power and equipment, Seaboard Air Line; John Purcell, assistant to vice-president, Atchison, Topeka & Santa Fe; R. L. Kleine, assistant chief of motive power, Pennsylvania, and O. A. Garber, chief mechanical engineer, Missouri Pacific.

Your committee also nominates W. L. Bean, mechanical manager, New York, New Haven & Hartford Railroad, to fill the vacancy account of A. R. Ayers, being nominated for vice-chairman.

The report is signed by F. W. Brazier (chairman), assistant to general superintendent motive power and rolling stock, New York Central; T. W. Demarest, general superintendent motive power, Western Region, Pennsylvania; C. E. Chambers, superintendent motive power and equipment, Central Railroad of New Jersey; J. J. Hennessey, assistant master car builder, Chicago, Milwaukee, St. Paul & Pacific, and J. Purcell, assistant to vice-president, Atchison, Topeka & Santa Fe.

Discussion

Mr. Chambers: I move the report be received.

(*The motion was seconded and carried.*)

Report on Design of Shops and Engine Terminals

Delays to power at inadequate terminals may defeat advantages of modern operating facilities

W. A. Callison
Chairman

The committee is of the opinion that the maximum utilization of modern power can not be obtained unless the engine terminal and facilities in connection therewith are designed for the rapid and efficient handling of locomotives. It must not be expected that antiquated terminals will do this. Also, the acceleration of trains over the road by improvements in grade and road bed, double tracking, signals, dispatching and other improvements in operation may be in a large measure offset by delays of motive power at inadequate terminals.

The committee therefore makes certain recommendations as to a typical layout for such a terminal and this report may be regarded as supplemental to its report on the same subject in 1923. The layout proposes certain dimensions applicable to handling modern steam locomotives in general, and is not intended for terminals handling extremely large or small locomotives, such as Mallets or suburban engines. Additional consideration must be given by individual railroads in order to meet special and local conditions required at a terminal in question.

The suggested layout is for a terminal dispatchment of 75 to 90 locomotives each 24 hours. Most of these dispatchments would pass into and out of the house, but it is assumed that a portion are yard engines doubling out and not entering the house. This is based on about three locomotives per stall each 24-hour period, excepting those stalls used for engines held for heavy roundhouse repairs. The plan is for a total of 30 stalls, including five repair stalls, four of which are provided with drop pits.

The turntable is a minimum length of 100 ft. and should be of the three-point suspension type in view of eliminating spotting and balancing of locomotives before turning. The table should be driven with power units on each end which operate simultaneously from dual controls located on both ends and interlocked to prevent confliction. A dead-engine puller located on and operated from the table may be installed if it is felt that local conditions require it. When construction and drainage will permit, a deck table with the girders below is recommended instead of the through girder type with the shallow pit. A walk way on the table on each side of the engine is desirable. The turntable pit should be of concrete and provided with adequate drainage.

Building Recommendations

The engine house building throughout should be as near fire proof construction as possible, and it is recommended that it be of concrete with steel framing. Steel framing exposed to the action of gases should be eliminated where possible by the substitution of reinforced concrete. Dirt, cinder, or brick floors are not suitable for trucking. Plain concrete is very good, but hard to repair. A concrete base floor is recommended, to be covered with a top of more plastic material, keeping in mind that the topping must be water proof and strong enough for heavy trucking. The floor drainage should be accomplished by a crown sloping toward the pits.

The minimum length of stalls is 115 ft. from the inner to the outer engine house wall. A minimum of 110 ft. from the turntable to the inner wall is provided for movement of locomotives on this track behind locomotives standing in the house, without interference to the continuous operation of the turntable, and eliminates the necessity for frogs. The minimum side clearance at inner-wall doors should be 14 feet between the faces of the posts. Overhead clearance should not be less than 17 feet.

Each stall is provided with an engine pit 94 ft. in length and as wide as construction will permit, approximately 4 ft. Fifteen feet of space is allowed in front of the pit and the remainder of six feet behind. In order to facilitate passage of trucks, the tracks should extend a minimum distance beyond the front of the pit. The pits should be free from obstruction, and air, steam, water, or electric connections in them are not necessary. Substantial jacking foundations on each side of the pit are necessary.

Drop Tables

Located in a bay are two drop tables, each serving two tracks. They are the single-wheel type and are located opposite from the leads to facilitate placing of dead engines on them. Both are located at a sufficient distance from the inner wall so that they will accommodate dropping of wheels on any locomotive and allow the doors to remain closed. The table nearest the doors is of heavier capacity for dropping of driving and trailer wheels, while the other may be lighter and accommodate engine truck, trailer, and tender wheels only, if desired, and if it is felt that local conditions warrant, it may be of sufficient size to permit lowering of four-wheeled trucks as a unit. The drop table arrangement is not intended for general repairs or backshop work, as it is assumed that such work shall be done at the general shop. Two of the drop-table tracks are extended for some length toward the machine shop in order to make a more flexible arrangement.

In the drop-table bay, in wire-netting cages, are located the rooms for pipe fitters, carpenters, electricians, etc. Rooms are also provided for a tool room and air brake equipment testing and repair shop. The wire cages do not shut out the daylight, but in order to prevent action of gases on tools it may be desirable to enclose the tool room by a solid partition with a low ceiling. Forges, power hammers and furnaces should also be located in the bay, but it should be kept in mind, however, that an unobstructed aisleway should be maintained for passage of floor cranes and trucks from one side of the house to the other through this drop-table bay.

The Machine Shop

The machine shop is adjacent to the drop-table bay, and connected to the bay by a large aisleway, thereby separating the buildings to provide daylight and ventilation. It is not thought desirable to locate machine tools in the roundhouse proper where they are subject to the action of the house gases. This separation also aids materially in proper heating and ventilating of the machine shop. A wheel track runs entirely through the machine shop, providing movement of wheels from drop pit to loading tracks outside. The shop is not provided with an overhead traveling crane, but should be provided with jib cranes and small monorail hoists, conveniently located. The following machine tools and equipment are suggested:

Lathe for engine-truck and tank wheels
32-in. heavy-duty lathe
20-in. lathe
8-in. lathe
5-ft. radial drill
21-in. upright drill
46-in. vertical boring mill
36-in. by 36-in. by 120-in. planer
32-in. crank shaper
2-in. single-head combination bolt and pipe-threading machine, ½ in. to 2 in.
High-speed hack saw
50-ton forcing and bending press
Tool grinders
Power hammer
Small flanging clamp

Material and Stores

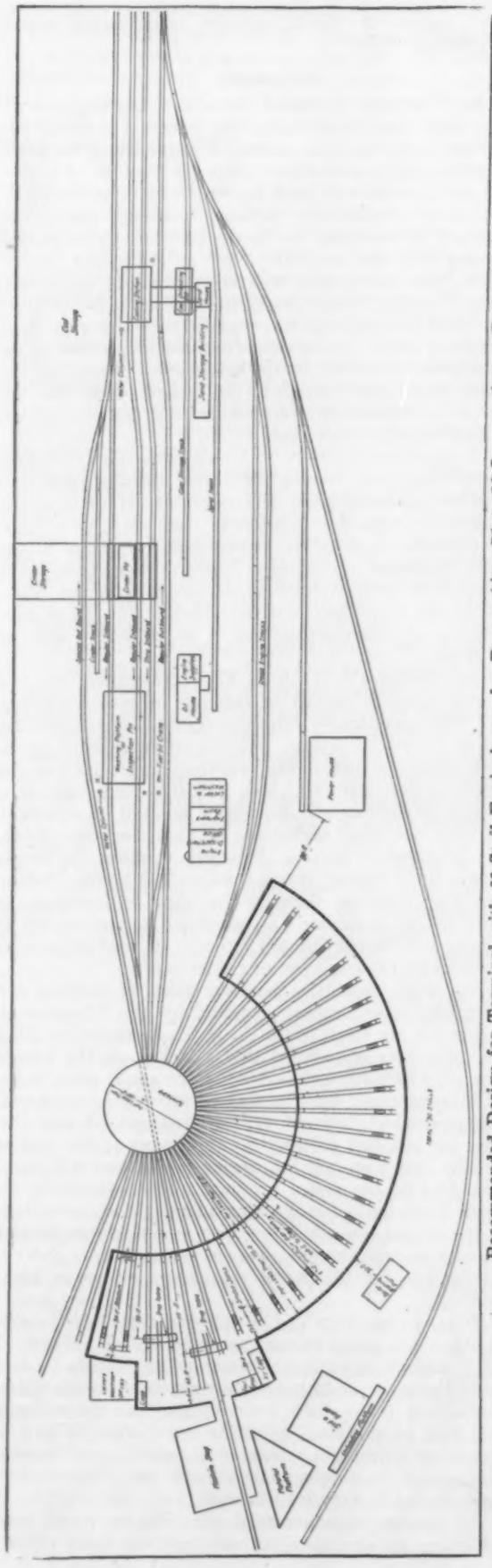
Casting platforms, material storage, wheel tracks, and the store room are located adjacent to the machine shop. Concrete roadways from these facilities to the machine shop and roundhouse should be provided for movement of trucks and cranes. The storehouse and machine shop are served by a switch track, and a hoist should be provided for loading and unloading wheels. Elevated unloading platforms will facilitate unloading into the storehouse.

Boiler Washout Plant

The boiler washout plant is located as nearly central as possible. Central location reduces the distance to transmit water and steam and the piping can be arranged with branches to each side of the house, whereby one side may operate in case the other side is undergoing repairs.

Piping

The question of piping should be given ample consideration in order to avoid waste of fuel and labor. It is recommended that all house piping be located overhead and not underground. Steam pipes should be covered with efficient insulating material, with provision for securing the insulation permanently in place. Only accessible, rugged valves should be considered. The following sizes of main pipes are recommended for this layout: Water, 4 in.; blower, 4 in. 3 in.; air, 4 in.; boiler washing, 6 in.; blow-off, 8 in.; wash or fill, 6 in.



Recommended Design for Terminal with 30-Stall Enginehouse for Despatching 75 to 90 Locomotives a Day

Some roads are giving consideration to and installing direct steaming of locomotives. This method deserves careful study and would necessitate an additional live steam main throughout the house, in lieu of the usual steam blower line, and the design of a power plant of sufficient capacity and pressure to meet the demand.

Electric fan blowers placed over the stack are also available and should receive consideration in view of eliminating the steam blower line and otherwise effecting economy.

Cranes

A traveling crane in the house proper in this layout is not recommended because, in order to install a traveling crane, it is necessary to construct a building of sufficient height to permit proper clearance over the locomotives and also to install smoke receivers with a down draft system instead of smoke jacks. This causes expensive construction and we feel that the additional expense is not justified. The layout proposed provides for an aisleway throughout the house, drop-table bay and material yards for the operation of a crane-type truck, equipped with a power unit to give 24-hour service. Smaller power-trucks without the crane feature should be provided as necessary. The column construction should be designed to allow for proper movement of the truck crane.

The committee wishes to call attention to the following jib-crane arrangement, which may be used in conjunction with the floor crane, thereby making a flexible service with a minimum amount of waiting: two jib cranes equipped with chain hoists are located between adjoining tracks on the roundhouse supporting columns—one to serve the front portion of the locomotive and one located some distance back.

Lighting and Electric Circuits

The engine house should be designed to provide for a maximum of daylight consistent with safe construction. Too often the lighting is inadequate in daytime near the inner wall, especially with the doors closed. Observation of several electric lighting arrangements were made, and the installation included in this layout was found efficient. Two lens lights are located on the outer circle wall and one lens light located on the inner circle wall. These are located approximately 13 ft. above the floor line, and between stalls, so the light is thrown between the engines. On each supporting column at the side of the pits and about 8 ft. above the floor is a 100-watt lamp covered by a deflector and goose-necked so as to throw the light directly on the rods and motion work of the locomotive. The conduit is located in the floor and the lights, below the gas and moisture line, which tends to reduce the maintenance.

In addition to the lighting circuit, provision should be made for power and electric welding circuit if used. Electric welding outlets should be provided between every second stall and located on posts or columns so as to serve the adjacent tracks.

Lead Tracks

Five tracks lead from the turntable. Two provide for inbound locomotives, two for outbound and one to the storage tracks. It is the intention to avoid facing point switches where possible. The special outbound lead should be kept clear ordinarily and be used as an outbound run-around track.

The two regular inbound leads converge near the table at a one-direction switch while the third inbound lead allows engines to go either directly to the table after passing the cinder pit or to cross over to the regular outbound lead through a cross-over. This provides for movement of switch engines not entering the house to either outbound track. The three inbound leads pass over the cinder pit, while only two pass over the washing platform or inspection pits. The length of the lead tracks is 850 ft. from the table to and including the coaling station. Of course the inbound leads should extend beyond this point to allow locomotives that might arrive in fleets to accumulate before being handled past the coaling point.

The coal storage track is for the current supply of coal and should slope slightly toward the unloading pit. If it is the desire to store coal in piles on the ground in the place designated, it might be of advantage to locate this track and the coal-unloading pit on the opposite side of the engine leads, in order to place the unloading pit nearer the coal storage. It is also suggested that the track in that case be extended to the outer extremity of the cinder storage. This arrangement, however, tends to scatter the facilities to be switched, which is undesirable.

The sand track is for the current supply of sand. On this track should be facilities for unloading cars over a sand pit at the sand house and machinery desired for unloading sand for storage. This track extends to the oil house for unloading of tank cars and engine supplies.

The cinder track is for cinder cars being loaded from pit or

storage. It has a capacity of four cars, two of which, when loaded, can be shoved off of the pit toward the stub end and the other two cars brought onto the pit for loading.

There is a service lead taken off at a point near the extremity of the terminal leads, which has switch tracks to the store room, power plant, and other facilities that local conditions may require.

Engine Supplies and Oil House

The supply building is located along the lead tracks near the point where inbound engines stop at the inspection pits or washing platform and outbound engines stop at the water columns. This building should be fireproof. All supplies are removed from inbound locomotives and placed in charge of an attendant and the engine is re-supplied with oil, ice, cans, etc., when dispatched.

Cinder Pit

The cinder pit is of the water pit type and served with a transverse overhead traveling crane. Three tracks cross the pit with a capacity of one locomotive each. The cinders are picked up out of the water by a clam bucket from between the two regular inbound leads, near the longitudinal center line of the pit as a whole. This makes a rather deep pit in order to provide proper slope to the sides, but this is not objectionable and adds to the capacity of the pit. Four cars can be loaded on the cinder track without refilling it with empty cars. This is about a 48-hr. supply and less than one-half the capacity of the cinder pit. The crane runway is on steel columns mounted on concrete foundations extending several feet above ground line, and is extended over the cinder storage. Installations of this kind may be utilized in handling certain material if desired. It is suggested that the cinder pit be piped for steam for thawing ash pans in cold climates.

The central portion from which the pit is emptied can be entirely surrounded by a heavy railing. The remainder of the top of the pit can be entirely covered by stationary platforms, therefore leaving only the space between the track rails open, and this space can be protected by the use of large stationary gratings. The entire concrete structure around the ends of the pit at points where the locomotives enter and leave can be somewhat elevated above the ground line, thereby largely eliminating the chance of accidental entrance to the pits at that point.

The shallow, dry type of pit could be substituted in the layout proposed without rearrangement of the tracks. The loading buckets operate in tunnels underneath and at right angles to the tracks served. The cinders are dumped directly from the engine into hoppers underneath the tracks and thence into the buckets, after which, the pressing of an electric button conveniently located automatically moves the bucket out of the pit, up an incline where the cinders are dumped directly into a car, and automatically returns the bucket directly underneath any track desired. For the terminal described, two of these units should be installed.

Coal and Sand

The coaling and sanding facilities are located 240 ft. from the cinder pit and are incorporated as one unit, serving all inbound and outbound tracks, four in number. The capacity of a coaling or sanding station is governed almost entirely by local conditions and the prospects for future growth of the terminal. It is recommended that a 24 to 48-hr. supply be placed in the overhead bins.

The sand is dumped into a pit and elevated to artificial drying and screening bins and is blown by compressed air into storage bins overhead and located in the coaling station.

Water and Oil

Water cranes serve all inbound and outbound tracks and should be so located that the drippings will not interfere with switches. Sewer and gratings should be provided for carrying away the drippings from the spouts. Two cranes are located at the coaling plant which may serve all four leads. These are not intended for regular use, but may be used as necessary. Three are located at the opposite end of the lead facilities. Two of these are intended for regular use of the inbound engines, one of which also serves the special outbound. The third crane serves the regular outbound lead. Oil cranes are located primarily to serve the outbound leads only.

The report is signed by W. A. Callison (chairman), superintendent motive power, Chicago, Indianapolis & Louisville; J. M. Henry, assistant chief of motive power, Pennsylvania; B. P. Phelps, engineer shop extensions, Atchison, Topeka & Santa Fe; J. A. Broshart, general master car builder, Cleveland, Cincinnati, Chicago & St. Louis; J. Burns, works manager, Canadian Pacific; G. F. Hess, superintendent motive power, Wabash, and A. M. McGill, assistant superintendent motive power, Lehigh Valley.

Discussion

C. E. Chambers: I think I can offer a few suggestions which would materially help this layout. I would reverse the layout to some extent. I would move the coaling station up to where the cinder pit now is. I would move the inspection pit back farther away from the turntable, and where the present coaling station is indicated. The reason for that is that an engine should be inspected on arrival. Not all railroads knock the fire from each engine on arrival. In fact, the Jersey Central seldom if ever draws the fire on a locomotive, other than for washing out, repairing fireboxes or flues or cleaning flues. Proceeding from the inspection pit on to the cinder pit would be the next move. Construct the coaling plant close enough to the cinder pit so that the overhead crane not only can handle ashes but can unload the sand into the sandhouse.

C. J. Bodemer (L. & N.): Could economies of operation be effected by having the boiler washing plant and the power house adjacent or combined? It seems to me that in this layout it is possible to joint these two facilities, by either moving the boiler washing plants to the location adjacent to the power house or vice versa. It is an important matter and I would like to have the chairman of the committee tell us whether they gave consideration to that feature, and, if so, why they did not join them.

B. P. Phelps (A. T. & S. F.): Answering the last question first, in regard to location of boiler washing plant, that was located centrally on this layout with respect to the piping layout. As you will note in the paragraph covering the boiler washing plant, it was the thought to separate the house into two parts so that if one part was out of commission on account of repairs to pipe lines, the other part could be used for boiler washing. It might be possible, however, to move the power house a little further down towards the boiler-washing plant and combine them. The idea in locating the power house as shown was, as stated in the report, so as to be convenient for the removal of coal or moving in of coal and moving out of cinder cars.

Now, with regard to the inspection pit location and cinder pit. The location proposed by Mr. Chambers is the location set forth in the A. R. E. A. report of 1921. The committee considered that. It has all the advantages of which he speaks but, at the same time, it has this disadvantage; namely, that of attempting to inspect an engine which has not yet been washed off and also, if the fire is killed before the engine goes to the coaling facilities and then into the engine house, you will lose a great deal of the steam pressure and consequently the benefit from the boiler-washing plant. It is desirable to get the engine into the house just as quickly as possible and with as much steam pressure as possible, in order to fully utilize the blown off steam and water in boiler washing.

W. H. Flynn (N. Y. C.): A great deal depends on what you are going to use that terminal layout for. If Mr. Chambers has got a situation as he describes, which would appear to be largely a turning point rather than a maintaining point, then I would say that the arrangement that he proposes would be excellent. Where we have to provide for a maintaining terminal and locomotives are out on long runs, the layout that the committee has proposed is very well set out.

The speaker who preceded Mr. Phelps, in his com-

ments, called attention the relative locations of the washout plants and the power house. The way the plant is now, it would seem almost necessary to put another washout house near it. The location, however, would be suitable if the power house were adjacent to it and I cannot see any reason why those two facilities should not be combined to advantage.

W. L. Bean (N. Y., N. H. & H.): A great deal depends, of course, on the general character of the terminal. In the east, to a large extent, engines do not have the fires dumped to the extent that they do in parts of the country where weather conditions require frequent dumping or daily dumping and, furthermore, the turns are frequently larger, especially in the suburban territories. So that, after all, what is required is a study of the requirements locally.

Not very long ago a plant was presented which did not have any through tracks for moving engines in and out of the house over the turntable when dead, although it would seem to a mechanical man that that would be fundamental. I would like to mention one detail, especially for the northern climates, and that is of having enough clearance between the bottom of the turntable structure and the pit. The one that I have in mind, built in recent years, has only four inches. Engines are growing longer and most of us will find that we have terminals built so recently as to be considered entirely modern, that are not adequate as to length, permitting closing doors behind engines in the winter and giving sufficient latitude for work—for trucking, for moving engines, for spotting, etc. Our road is concerned with that problem right now on a modern terminal.

We can all pay a lot of attention to this matter of direct steaming. In the absence of a definite necessity for such an installation, the matter of independent exhaust blowers, in place of the usual blowing arrangement, which puts a heavy demand on the boiler plants and the coal pile, is important and the direct steaming is going to be of great value in localities where the smoke nuisance is always present.

I do not recall noting in the report a suggestion of pneumatic tube connection between the inspection pit and the general foreman's office. That speeds up the movement of reports and has been found very advantageous.

W. A. Pownall (Wabash): Many railroads that use treated water find it necessary to blow off incoming engines and sometimes outbound engines. There should be some permanent arrangement provided so that the engine can be blown off. This may be by blow-off boxes or stacks, or some system of pipe whereby the engine can be blown off through the blow-off cock, and the steam confined. This is possibly a detail, a local detail, but something of the sort ought to be provided for.

L. S. Kinneard (C. & E. I.): I notice that the washroom and locker room is located on the outer wall. This would obscure somewhat the light from the outer window. I feel that the location would be better against the end wall of the roundhouse, where the light is not so desirable.

Mr. Phelps: With regard to the blow-off of engines on the leads, some roads follow that practice, but, of course, if we are going to conserve the steam for a boiler-washing plant it would be preferable to blow off the engine in the roundhouse.

It was desired to locate the locker centrally. If located on the wall nearest to the power house it would be out of the way. That locker room can be provided with skylights and we have some installations of that kind. There are some roads that do not care to have the locker room and the toilet facilities separate and outside of the roundhouse, as the men go out, after they have been in the firebox, all sweaty and they will prefer to have a short distance between the roundhouse proper and the boiler room.

O. S. Jackson (U. P.): I notice the track leading to the machine shop and I wondered why the track arrangement was not fixed so that this track would go directly on the turntable and possibly connect at the other end with the run-around track, which would give another or added exit from the turntable to the machine shop.

I wondered if the committee contemplated the use of a gantry crane over the cinder pit. We have such an arrangement at a new roundhouse at Ogden, Utah. We use the gantry crane over two water cinder pits, which works very satisfactorily.

Mr. Phelps: In commenting upon Mr. Jackson's suggestion, it was the committee's intention to use the track shown only for the moving of wheels from the drop pits to the machine shops. It is possible some layout for a track leading directly through the machine shop from the turntable, on which engines can be run, would be useful. That necessitates more clearance and a larger building for the machine shop. It was thought to make this layout the minimum of requirement and therefore the track as shown is for wheels only.

With respect to the gantry crane, the report mentions the overhead traveling crane. A gantry crane can be used but there are some hazards in connection with the gantry crane which are not present with the overhead traveling crane, although the overhead traveling crane is more expensive to install.

C. E. Brooks (C. N.): I feel from experience that we have had that anybody who has a three-point suspension table will be most active in trying to get rid of all the balance tables on the railroad because if there is anything that will help get heavy power of great length into the house without difficulty in bad weather, it is the three-point suspension table.

Reference has been made to the clearance under the table. In a really bad-weather country, where there is heavy snow, I believe that the complete covering in of the entire turntable is a thing that will pay you back quickly. One particular point is to be sure of the height of the covering in relation to the height of the rest of the roundhouse so that you would not get any downdraft on the smoke jacks.

The next item that I have noticed is with reference to the building of the roundhouse out of steel or concrete. If you are in a district where you are handling high-sulphur coal with cold or damp weather, steel in a roundhouse is no good. It never was and it never will be, unless it is steel that will not corrode. And the very same thing applies to a concrete roof. In cold climates you cannot keep a concrete roof on a roundhouse because it will simply take in moisture, freeze and flake out.

The next item that I have noticed is in connection with drop tables. In my opinion a drop pit is either a wheel drop pit or it is not. If you are going to take out tender wheels and truck wheels on a drop pit you cannot arrange that pit so that you can take out a complete truck. A complete truck has got to come out on the driving wheel pit and we have to be careful to have the driving wheel pit of such dimensions that we do not have a pair of the smallest diameter driving wheels in the air while taking the next pair out. Now, that is a thing that has bothered a great many engine house mechanics, and I think that possibly that particular item in this paper—of so arranging wheel pits that you can handle the entire combination of small

wheels out of either a four or six-wheel truck, that you can handle a truck, that you can handle a driving wheel, or that you can handle your smallest and largest diameter driving wheels without having part of the engine out of the house—is a thing that should be given possibly little more consideration.

The next thing that I have noted is in connection with piping. I am a firm believer in overhead piping, but if you have any cold pipes overhead, the same thing will happen to them that will happen to steel work in the roof of a roundhouse, unless they are absolutely protected by some means from corrosion. I have not noted any reference to oil piping in a roundhouse lighted by oil. That is a thing which any one not considering direct steaming might well give consideration to. I think, as suggested by Mr. Bean, that the question of direct steaming is one that can be given a great deal of thought and consideration because, in certain localities, at least, it is of great benefit.

Under the subject of "heating and ventilating," I have seen installations where the hot-air system is unquestionably better for the locality. I have never yet been able to convince myself, however, that a low-pressure set of steam coils in the pits is not about as good a device as you can get and as simple, provided that they are inset so that a man can work in the pit without destroying the piping.

The next item that I had marked is on page 10, where you refer to weighing hoppers. This is a thing which every man who is instructed in fuel consumption will be particularly interested in; but we have never yet been able to discover any locomotive coal weighing apparatus that would stay put. If the committee can give us any information on that line I am sure we would appreciate it.

I have noted with particular interest the remarks that have been made with regard to the location of inspection pit, cinder pit and coaling facilities. In our country very little inspection work can be done outside during a great part of the year. The same thing applies to the washing. We can wash for perhaps six or seven months of the year, successfully, outside. The rest of the year we cannot.

There is one thing which has always interested me greatly, in connection with roundhouse work, and which I have never been able to satisfy myself that we could arrive at any definite conclusion regarding, and that is coaling. Mr. Chambers, I believe, mentioned the location of the coaling plant today and I cannot help but wonder why we coal engines going into roundhouses. I know in some of the roundhouses that I have worked at, as a foreman and a mechanic, that we had to coal locomotives and get them in. Particularly with long runs and where our coal capacity on our locomotives is taxed to the utmost, I cannot help but feel that the very last thing that should be done on a locomotive is to coal it as it leaves the terminal.

Mr. Phelps: With reference to Mr. Brooks' comments on the construction of the enginehouse, particularly with regard to the use of steel, the engineers are in a quandary as to the construction to use. If they make the roundhouse fireproof, it is either reenforced concrete or steel. Reenforced concrete columns will be so large when placed between the pits that they will interfere with the movement of the crane truck around the engine. Therefore, in some roundhouses steel columns have been used in place of the reenforced concrete columns between engine pits, with a view of getting more clearance between engines. Of course, this steel must be painted each year to protect it. That applies also to the pipe lines in the roundhouse. They should be painted for protection but even at that I think it is preferable to have the pipe lines overhead than underground.

With reference to concrete roofs. It is true that in humid climates condensation collects on the underside of concrete slabs, and some roundhouses are constructed with what is termed a slow burning roof construction. That is of heavy roof sheathing, with close joints, perhaps similar to two-by-fours, nailed closely together, and covered on the outside with fireproof roofing. In other roundhouses the concrete slab has been insulated, one method being by way of hollow tile in the roof slab. The air space inside of the tile acts as an insulator between the cold air outside and the warm moist air inside. Other roundhouses have had the concrete slab covered with other insulating material.

With reference to the drop table or drop pits, it is true that it is necessary to check accurately the wheel space of the engine to be handled. If it is not done it is very likely that it will be made too long to handle certain wheels, too long to handle the main pair of drivers on some engines and it will be necessary to chain up the two pair of drivers being dropped on either side, which is, of course, incomplete.

As to piping and oil, the committee has no information on that except that on some roads the oil is on the outside of a roundhouse and oil is not piped inside of the building. The portable fire lighters are taken to the oil station for refilling.

W. G. Black (Erie): The cinder pit seems to be very far from the turntable. Then you have three inbound tracks. I would like to suggest for consideration some crossovers, in case we get engines on one of the tracks that we want to get into the house earlier than the other engine, so that we can arrange to run them over the crossovers.

We have one outbound track on the cinder pit. Numerous engines have their fires cleaned and are ready to go out to work and the engine crosses over from one of the inbound tracks to the outbound tracks and that would materially assist in making it more flexible.

I note also on the sandhouse that we only have the one track. On our railroad we use the clam shell for unloading sand. I think we ought to have two tracks for the sandhouse, one for the coal clam and one for the cars.

The location of the power house and washout plants close together is a problem that also enters into the man-hours of your roundhouse. By concentrating your force together with the power house and the washout plant, the power house force can take care of the washout plant and that eliminates attention from other forces of the roundhouse.

Mr. Phelps: Regarding Mr. Black's comments on the movement of engines on the enginehouse leads. It was the thought that engines in going to the roundhouse would be handled through the coaling station or the cinder pit, if necessary, on the inbound lead and then cross over and come out on the regular outbound lead. It is not thought advisable to put a crossover between the regular inbound leads, that is, the first one and the second one of the engine house leads, but rather make that change in the drawing of the engine into the house on the ladder track approaching the engine lead. The sandhouse is of the mechanical type and the sand is dumped into the hopper in front of the house and the sand track shown there is right below the sandhouse.

J. A. Anderson (C. M. & St. P.): In the machine tool equipment I note that the committee recommends

an eight-inch lathe. It is thought possible that a larger tool might fit into the operation and be more flexible. It is also noted that a driving wheel lathe has been omitted. I assume that is intentional. There are a number of roundhouses despatching more than 90 locomotives which carry divisional mechanics, and it might be well to consider including a driving wheel lathe in the layout.

There are some items that have not been touched upon. It appears that the material platform could be moved over closer to the store unloading platform and made adjacent to the storehouse; this, we believe, would lessen the handling of the materials somewhat.

The scrap bin has been omitted. I assume that a certain part of the material platform is intended to be used for scrap. If so, I feel that it should be adjacent to the store unloading platform.

While the layout, as far as hostling is concerned, has been discussed I never knew a roundhouse foreman that did not want some additional crossovers. The hostling expensse can be reduced somewhat, in my opinion, by having additional crossovers or possibly putting in a ladder track, either above or below the coaling station.

There is one track leading off the double track on the inspection pit. I believe that the track nearest to the powerhouse could be cut over to one of the other tracks, leading to the turntable and eliminate the heavy movement over the one frog and switch point.

Mr. Phelps: In reference to Mr. Anderson's remarks as to the lathe, this is the minimum list of tools. Perhaps a driving wheel lathe is necessary where the terminal is to handle many engines and it will depend upon the location of the terminal with reference to the back shop. The eight-inch lathe is preferably a portable lathe.

W. R. Lye (N. Y. C.): The question of inspection pits has been a hobby of mine. As I view this layout it would be fine for the conventional handling of locomotives where they will go through the usual proposition of being coaled up, dumped, washed and put into the roundhouse. But at every terminal, handling from 70 to 100 or more locomotives, regardless of any desire we might have of doing the conventional thing, it has been my experience that we have to do the next best thing in a great many cases, either through the desire of the superintendent, or other factors. It has been necessary to take the next best action to get that locomotive into the roundhouse, back to the ready track and into service as quickly as possible. It seems to me that for such a problem which we all meet this layout is not quite the thing. In my opinion the inspection pit should come before the coaling plant.

The tank of a modern locomotive is increasingly important for inspection with our stoker applications, and so forth. If you get the inspection first, then get the engine to the coal dock and coal it up, then through to the cinder pit, the inspection has been made, and you can put the locomotive on the ready track, provided that you have a proper layout at your inspection pit.

It appears to me that thought could very well be given to a covered inspection pit, properly heated, where the entire force of inspectors could be maintained with a sufficient force under a foreman to take care of the average running repairs that might be found by the inspector, and then could go directly out into the service or, at the worst, could go into the engine house with a definite job of repairs that would require only that attention, and then go into service. It would expedite the movement in congested territory a great deal.

S. Zwight (N. P.): It is difficult for any committee to draw up a plan to meet all the requirements. I think this committee has done wonderfully well in laying out a plan that can be used as a basis from which to work. There has been quite a little said about the inspection pit and the washing platforms and coaling stations. These will depend largely upon climatic conditions. Up in the northwest country we find during the cold weather, with a lot of snow on the ground, that it is necessary to get the engine into the house immmediately after you knock the fire. Consequently they have to coal them up and then put them on the pit to get them in immediately. They do not do any inspecting outside of the house.

We are organized to do our inspecting after we get them into the house. I think for that reason the washing platform and the inspection pit are best suited here for general conditions. During the summer months when you can wash your engines outside, you can also inspect them on the outside. When it gets cold, you cannot do any washing on the outside, neither can you do any inspecting outside, and the engine must be moved into the house.

There are no partitions; that is, the house is not divided off into sections. It has always been our practice in the northwest country to divide the house into sections as a fire protection, and on account of the draft through the house in winter time if you had it all one section. We divide into sections of from six to eight stalls.

It would appear to me, as was said here, that the man-hour is a big consideration. Although it is a small shop, it appears to me it would be better to eliminate those walls and have your shop adjoin the roundhouse. That is what we have with the drop pit section, but that would not do in this case because there is no dividing wall between your roundhouse proper and your drop pit section and the smoke from your roundhouse might be objectionable.

There has been quite a little said about the boiler washing plant, and the power plant should adjoin it. Bear in mind that the steam for your boiler washing plant comes mostly from the roundhouse, also from your boiler washing plant and the roundhouse. The engines are blown off out into the roundhouse, from the roundhouse into your boiler washing plant and your pumps for washing out and filling up come from your boiler washing plant, so that it is quite essential that you have the boiler washing plant located as centrally as you can have it, which is the case as shown here.

Unless you can move your power plant up to near where the boiler washing plant is, it would be preferable to leave the power plant where it is, on account of coaling facilities, and have your boiler washing plant located centrally so as to make it easier to blow off from the center of your house, or from both wings of the house to the center.

Mr. Phelps: With reference to Mr. Zwight's suggestion on division of roundhouse, we have what are known as firewalls. That is done where the roundhouse roof is inflammable more than in a fireproof roundhouse. With the dividing of the roundhouse by firewalls you, of course, lose considerable space on either side of the firewalls; it makes it difficult to work on engines on either side of this firewall. Therefore, in the reenforced concrete house—the fireproof house—the firewalls have been largely omitted, as suggested. The machine shop was made separate from the engine house, for the reason that it is desired to provide better light and ventilation in the machine shop, and also have the machines out of the smoke of the roundhouse.

The committee is attempting to make a typical layout

and not a specific layout for any particular climate or location. For that reason such facilities as your inspection pit, your cinder pit and the coal and the sand-handling facilities may be located to suit a particular requirement.

Mr. Chambers: I wish to emphasize the suggestion as to the scope of the inspection pit. This largely depends upon how much money they will let you spend, but an enclosed inspection pit is very desirable. Heated for winter time it is much more desirable. A small repair force is a necessity at that place, I think. There are a great many slight repairs that can be made when found by the inspector, such as the tightening up and application of bolts and nuts, so that the engine does not need to go to the house at all, and that it what we try to practice on the Central Railroad of New Jersey. In doing that you will be surprised how quickly you can repair the modern engine of today, which, much to my surprise, is a quicker task than the little old eight-wheelers we had twenty-five years ago.

H. D. Rauch (N. Y. C.): In the interest of service of man-hours and economy, I would like to speak about the question of lockers and toilet facilities. I assume that an enginehouse of this sort perhaps would employ anywhere from 200 to 300, and possibly 400 men, according to the number of engines turned. The toilet facilities are located at the extreme end of the engine house, with other facilities in the engineers' room, which, of course, is located away from the enginehouse and outside. In view of that, it would mean many trips over a complete 30 stalls, which would probably run into a great many man-hours. Assuming that only five minutes could be saved on a two hundred man-hour force, it would amount to approximately sixty-six man-hours in the twenty-four, and that would be a considerable item of saving.

I would suggest that in a layout of this kind that that be taken into consideration. While I appreciate the committee had to make a general layout, yet it seems to me that is one of the things that might be incorporated in a general layout is to have a little more equitable distribution of the locker rooms and toilet facilities.

Mr. Phelps: Regarding Mr. Rauch's remark on the location of the toilet rooms, it is possible to add another toilet room for the cinder pit men, the washing platform and the inspection pit men in connection with the engineers' lavatory building. That has been done in some cases, but the committee did not think it was necessary to show it on this report. It is possible, however, to put a separate toilet room for these men in connection with the building for the engineers' laboratory, which will divide the toilet facilities. However, it is the opinion of the committee that one locker and washroom for the enginehouse force would be sufficient, located as shown on the typical layout.

Mr. Barnes (C. N.): There are a few suggestions I feel I might make, and one is to have one section of the roundhouse of sufficient length to permit of the removal of units on our largest and longest engines without the necessity of keeping the doors open. That would apply especially in colder climates.

Another suggestion is to have overhead travelers over certain sections of the house, to facilitate the removal of side rods, pumps, smokebox doors and rims. There is another matter, also, in connection with roundhouse operation that we must consider today in connection with booster equipped engines; that is the removal of trucks, trailer trucks, if you please. In none of the roundhouses on our territory are we equipped with a suitable drop pit for the removal of booster equipped trailer trucks. I believe in up-to-date roundhouse design. That is one feature we should give considerable thought to.

J. Purcell (A. T. & S. F.): I believe that your committee has presented a very valuable report. It has been quite well discussed, and *I move you that we receive it, that it be printed in the minutes of the meeting, and that the committee be given a vote of thanks.*

(*The motion was seconded and carried.*) (The meeting adjourned.)

Texas and Pacific Yards and Terminal Opened

THE new Lancaster yards and terminal of the Texas & Pacific at Tremble, three miles west of Fort Worth, Texas, were formally opened on June 12, when more than five thousand persons inspected the yard and its facilities. The hump classification yard is equipped with car retarders and scales and is designed to classify 3,000 cars per day. The engine terminal facilities include a direct steaming system, which is used to steam 40 locomotives a day to working pressure, without building fires in the enginehouse. Repair facilities include a locomotive repair shop and car repair tracks.

C. & A. Chemical Engineer

ROBERT SENNIFF, assistant chemical engineer of the Chicago & Alton, with headquarters at Bloomington, Ill., has been promoted to chemical engineer, with headquarters at the same point. He succeeds L. O. Gunderson, who resigned on June 15 to become president of the Electro-Chemical Engineering Corporation, Chicago, which will manufacture water softening and treating plants.

Baldwin's to Celebrate Transfer to Eddystone

DURING Wednesday's session of the Mechanical Division, the following letter from S. McNaughton, manager of domestic sales, Baldwin Locomotive Works, was read, inviting the members of the division and their friends to be present at exercises marking the complete transfer of the works from Philadelphia to Eddystone:

"On Thursday morning, June 28, exercises will be held at Eddystone to mark the transfer of The Baldwin Locomotive Works from Philadelphia to Eddystone.

"Mr. Samuel M. Vauclain, President, cordially invites the members of your Division, their families and their friends to be present on this occasion. A special train will leave Atlantic City at 8.30 a. m. on June 28, going direct to Baldwin, and a special train will leave Broad Street Station at 10 o'clock on the same morning for Baldwin. Furthermore, special cars will be attached to the 8.00 a. m. Pennsylvania Railroad train from New York, connecting with the special train at West Philadelphia; all eastern standard time. Transportation will be provided for all our guests on these trains.

"If you will kindly have this invitation extended when the members of your Division are in session, the courtesy will be greatly appreciated.

"Those accepting the invitation are requested to please leave their names at the Baldwin booth, No. 625."

P. R. R. Mechanical Changes

D. K. Chase, master mechanic of the Buffalo division of the Pennsylvania, with headquarters at Olean, N. Y., has been transferred to the Eastern division, with headquarters at Canton, Ohio, succeeding J. A. Sheedy, who has been transferred to the Eastern Region. H. L. Nancarrow, assistant master mechanic of the Akron division, with headquarters at Akron, Ohio, has been promoted to master mechanic of the Erie and Ashtabula division, with headquarters at Mahoningtown, Pa., succeeding H. S. Noble, who has been transferred to the Cleveland division, with headquarters at Wellsville, Ohio. Mr. Noble replaces E. L. Bachman, who has been transferred to the Buffalo division to succeed Mr. Chase. H. D. Carpenter, engine-house foreman at Zanesville, Ohio, has been promoted to assistant master mechanic of the Akron division, succeeding Mr. Nancarrow.

Registration

Division V—Mechanical

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Adams, A. C., S. M. P., No. So., Chalfonte
Anderson, E. C., M. E., C. B. & Q., Ambassador
Andrenceitti, J. A., E. E., C. & N. W., Traymore
Armer, Alan M., M. M., P. & E., Colton Manor
Armstrong, Geo. W., Bethlehem Steel Co., Shelburne
Arter, W. D., M. M., N. Y. C., Pennhurst
Babcock, W. G., M. M., N. Y. C., Haddon Hall
Becherer, Frank H., Supt. Car Dept., C. R. R. of N. J., Dennis
Baldwin, T. C., M. M., N. Y. C. & S. L., Haddon Hall
Balliet, H. S., Eng. Train Control, N. Y. C., Ambassador
Barba, C. E., M. E., B. & M., Marlboro
Barton, T. F., Genl. M. M., C. & O., Shelburne
Baumbush, Albert J., Asst. G. F., Gr. Cen. Term., Pennhurst
Bawden, Wm., S. M. P., Term. Ass'n of St. L., Craig Hall
Beattie, J. A., Gen. Supt., Lake Terminal, Traymore
Bebout, G .W., E. E., C. & Q., Dennis
Beck, L. A., Asst. to Pres., No. So., Traymore
Beck, F. E., M. M., G. T. & W., Princess
Becker, Harry G., Shop Supt., D. & H., Runnymede
Beeson, H., Insp., Monongahela, Shelburne
Beith, Alexander, For. Elec. Tract., W. J. & S.,
Bell, J. Snowden, Amer. Loco. Co., Morton
Bennett, R. G., Gen. S. M. P., Penna., Chalfonte
Billau, Lewis S., Asst. Elec. Eng., B. & O., Chalfonte
Billington, M. D., Asst. A. B. L., M. C., Ambassador
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Bingham, A. D., M. M., N. Y. C., Ritz
Bissett, J. R., Mech. Inspc., S. A. L., Chelsea
Bjorkholm, J. E., Asst. S. M. P., C. M. St. P. & P., Ambassador
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Black, R. L., M. M., N. & W., Ritz
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Bohannon, G. W., M. E., D. M. & N., Chalfonte
Booth, T. K., M. M., B. & L. E., Traymore
Borell, E. A., Eng. M. P., Reading, Ritz-Carlton
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Clarke, James S., Genl. Insp. Loco. Maint., B. & M. Governor
Cline, R. H., M. M., B. & O., Princess
Colcord, W. J., Asst. Rd. Fore. Eng., Penna., Elwood
Coleman, L. G., Mgr Loco. Dept., Ingersoll Rand Co., Marlborough
Connal, W. F., M. E., C. & N., Ambassador
Connor, J. T., Supt. of Shops, So. Pac., Shelburne
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Cunningham, W. P., S. M. P., Monongahela, Shelburne
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Davis, John E., M. M., H. V., Seaside
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Elmore, D. R., Asst. to G. M., F. G. E., Haddon Hall
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Eves, R. W., Elec. Sup., B. & O., Dennis
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Flynn, W. H., Gen. S. M. P. & R. S., N. Y. C., Marlboro
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Frank, Carroll, Fuel Supr., Maine Cent., Ambassador
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Freeman, Samuel, Asst. R. F., Penna.
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Fry, Lawford H., Standard Steel Works Co., Shelburne
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Hass, H. P., Asst. to Mech. Mgr., N. Y. N. H. & H., Traymore
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Heeter, H. C., Asst. For. Elec. Dept., Penna., Continental
Helmer, Walter S., Eng. Power Brake Invest., A. R. A., Ritz-Carlton
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Hitch, C. R., M. M., C. & D., Shelburne
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House, C. M., S. M. P. & E., C. & A., Ambassador
Howley, T. F., Supv. of Fuel & Loco Oper., Erie, Strand
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Jansen, E. W., Elec. Eng., I. C., Dennis
Jackson, Fred, G. F. Birmkr., L. & H. R., Arlington
Jacob, Wm., Me. En., J. M., Ritz-Carlton
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Johnston, W. D., Dist. M. M., B. & O., Ambassador
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Kelly, William M., G. F., Penna., New England
Kennedy, S. G., M. M., A. C. L., Haddon Hall
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Kirkland, A. W., S. M. P., A. B. & C., Ambassador
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Knight, W. G., Mech. Supt., B. & A., Palm Hall
Knox, W. J., M. E., B. R. & P., Strand
Krell, F. C., Forrester, P. R. R., Penn Atlantic
Kueck, L. H., Ch. Drafts., M. P., Haddon Hall
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Kuhn, E. A., Eng., M. P., N. Y. C. & St. L., Ritz
Kuhn, E. J., Ch. Draft., M. K. T., Ambassador
Lamberg, G., Shop Supt., C. M. St. P. & P., Ambassador
Lanning, H. H., M. E., A. T. & S. F.
Leighton, Harold L., S. S., B. & M., Ambassador
Lentz, J. S., M. C. B., L. V., Ritz
Lever, T. H., M. M., Nev. Cop. Belt, Belmont
Lindeman, F. S., D. W. S. M. P., N. Y. C., Haddon Hall
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Lupton, G. W., Asst. to V. P., A. T. & S. F., Marlborough
Lye, W. R., Dist. S. M. P., N. Y. C., Traymore
Lynch, Geo. G., Asst. Mech. Eng., A. C. L., Haddon Hall
McConnell, C. H., M. M., P. & L. E., Haddon Hall
McDaniel, L. H., M. M., N. C. & S. L., Lexington
McKierman, J. C., Ins., B. & M., Ambassador
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Melanson, A. C., S. of S., Can. Natl., Stevenson
Michael, L .P., Mech. Eng., C. & N., Knickerbocker
Mickel, Fred, Dist. M. P. I., B. & O., Haddon Hall
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Miller, W. J., S. M. P., St. L. & S. W., Ambassador
Millspaugh, Clark, M. E., M. C., Ritz
Minette, J. H., G. F. Loco., B. & A., Ambassador

Mohun, John L., Mech. Asst., U. P., Ambassador
Moler, A. L., Supvr. Lubr., C. & O., Princess
Montgomery, Hugh., S. M. P. & R. S., Rutland, Dennis
Moody, W. O., M. E., I. C., Shelburne
Moore, Geo. W., A. S. M. P., St. L., & S. F., Ambassador
Morris, J. E., M. M., F. E. C., Sterling
Moses, H. K., M. M., B. & O., Central
Mullen, D. J., S. M. P., C. C. C. & St. L., Traymore
Mullen, P. L., M. M., C. M. St. P. & P., Ritz Carlton
Murphy, F. K., Asst. S. M. P., C. C. C. & S. L., Traymore
Murray, Geo. E., Elec. & Mech. Eng., G. T., Marlboro
Nanney, T. H., M. M., B. S., Haddon Hall
Nash, J. H., S. M. P., I. C., Chalfonte
Nelson, C. W., Supvr. Train Cont., C. & O., Dennis
Nelson, Wm., Mech. Eng., K. C. S., Ambassador
New, W. E., M. M., K. C. T., Traymore
North, James W., M. M., P. H. & D., Princess
Nunnally, M. P., Ch. Drafts., S. L. So., Chalfonte
O'Brien, W. J., Dist. S. M. P. & R. S., N. Y. C., Haddon Hall
Ohnesorge, W. H., M. M., B. & M., Wiltshire
Parker, H. H., M. M., Nor. & Ports. Belt, Princess
Parsons, C. F., Gen. M. M., N. Y. C., Haddon Hall
Parsons, F. F., M. C. B., Mid. Cont. Pet. Corp., Brighton
Parsons, J., Supt. Shops, N. Y. C., Haddon Hall
Peasley, B. J., S. M. P., S. I., & S. W., Traymore
Peek, S. L., Stat., Cent. of Ga., Knickerbocker
Perrine, W. M., M. M., C. R. R. of N. J., Haddon Hall
Petersen, W. A., G. S. Eng., C. P. R., Haddon Hall
Peterson, T. E., Asst. to M. E., B. & A., Pennhurst
Pfahler, F. P., Asst. to Ch., M. P. & E., S. A. L., Ritz
Porter, S. E. M. M., A. C. L., Clarendon
Powell, L. R., Jr., Pres., S. A. L.
Prendergast, A. P., Mech. Supt., T. & P., Ritz-Carlton
Pringle, H. C., Supt., Monon. Con., Chalfonte
Pyne, R. A., S. M. P., C. P., Ritz
Rabuck, J. A., Mech. Eng., L. & N., 243 Adriatic Ave.
Radspinner, W. A., Supt. Fire Prev., C. & O., Strand
Rafferty, C. D., M. M., A. C. & H. B., St. Charles
Ralston, J. A., M. E., Union, Marlborough
Rankin, Geo. W., A. M. M., L. & N. R. R., Ritz-Carlton
Ransom, M. S., M. M., N. C. & St. L., Lexington
Rasbridge, R. B., Supt. Car Dept., Reading, Ritz-Carlton
Rauch, H. S., Div. S. M. P., N. Y. C., Strand
Rauschart, E. A., Mech. Supt., Montour, Shelburne
Reed, M. R., S. M. P., Penna., Craig Hall
Reeder, W. W., Gen. For., M. P., Strand
Richers, G. J., M. M., Penna., Traymore
Riedinger, L. J., For. Car Insp., Penna.
Riegel, S. S., M. E., D. L. & W., Runnymede
Ringberg, Emil G., M. E., M. C., Ambassador
Rink, Geo. W., Asst. S. M. P., C. of N. J., Dennis
Robbins, F. S., S. M. P. & M., F. E. C., Ambassador
Robertson, G. W., M. M., C. & O., Ambassador
Robinson, T. M., Ch. Draft., H. V., Seaside
Robinson, W. L., Supt. Fuel & Loco. Perf., B. & O., Marlboro
Rush, Richard, Shop Elec. N. Y. N. H. & H., Osborne
Russell, L. A., Car For., B. & O., Assembly
Russell, Samuel, Div. M. M., B. & A., Haddon Hall
Russum, T. H., Supt. Pass. Car Dept., Dennis
Salisbury, R. W., Mech. Eng., T. & P., Ritz-Carlton
Sanderson, H. M., Ch. Cl. to Pres., C. R. R. Co. of N. J.
Sandman, A. G., Asst. to Ch. of Mot. Pow., B. & O., Brighton
Sasser, J. W., S. M. P., Virginian, Marlboro
Saterlee, Gerald B., Pres., Secy., C. R. R. of N. J.
Schad, John W., Div. M. M., B. & O., Assembly
Scheifele, John, R. F. of E., Reading, Jefferson
Schlafge, Wm., Past Pres., Strand
Sechrist, T. O., Asst. Supt. of Mchry., L. & N., Marlboro
Sharp, C. L., M. M., C. R. I. & P., Strand
Sharpe, H. W., S. M. P. & C. E., Can. Nat., Shelburne
Sheehan, J. E., Mech. Insp., N. Y. N. H. & H., Pennhurst
Siler, W. E., Insp. Tools & Mchy., C. N., Strand
Singer, James, Gen. M. M., N. Y. C., Ritz
Smith, C. B., C. F., B. & O.
Spangler, P. F., Supr. Car Rep., St. L., & S. F.
Stackpole, W. S., G. Stk., Pub. Serv., Haddon Hall
Stevens, Geo. F., Asst. Engr., B. & M., Ambassador
Stewart, J. R., Shop Supt., B. & O., Haddon Hall
Stock, A. C., T. E., Reading, Boscabel
Strauss, M. H., M. M., N. Y. C., Strand
Teague, A. R., M. M., M. & O., Princess
Temple, C. H., Ch. of M. P. & R. S., C. P., Traymore
Temple, L. E., M. E., Mo. Pac., Ambassador
Terrell, C. H., Asst. to Ch. Mech. Off., C. & O., Haddon Hall
Terwilliger, Geo. E., Supvr. Aux. Equipt., N. Y. N. H. & H., Shelburne
Trant, James J., Supt. Wheel Foundries, Pullman Car & Mfg., Chalfonte
Turley, Wm., M. M., Wabash, Belmont
Turnbull, R. J., Asst. to G. S. M. P., A. C. L., Haddon Hall
Tuttle, C. L., Mech. Eng., B. & L. E., Strand
Usherwood, Geo. B., G. S. of B., N. Y. C., Marlboro
Vanderslice, W. M., E. E., I. C.
Vogel, Geo. C., Gen. Pie. Wk., Supv., C. of N. J., Jefferson
Voigt, A. E., Car Ltg. Engr., A. T. & S. F., Marlboro
Wagar, S. J., Engr. Tests, C. & O., Ritz-Carlton
Wahlen, John, Mech. Supt., M. & W. R., Arlington
Walker, J. W., Ch. A. B. L., Penna., Elberon
Walker, R. A., M. M., M. K. T., Ritz
Wall, Geo. W., Ch. Elect., D. L. & W., Knickerbocker
Walsh, F. O., S. M. P., A. & W. P., Marlboro
Warden, H. M., Ch. Mech. Off., M. K. T., Traymore
Waterfield, D. B., Shop Eng., C. & O., Ritz-Carlton
Weber, G. A., Supt. Shops, T. & P., Chelsea
Webster, H. D., Engr. of M. P., B. & L. E., Chalfonte
Weedon, R. E., Supt. Ry. Shops., Sou., Fredonia
Whanger, E. M., Mech. Insp., H. V., Seaside
Wike, W. K., C. C. G. M., N. Y. C., Shelburne
Williams, A. H., Supv. of App., Can. Nat., Strand
Williams, A. Z., A. C. C. to Pres., C. R. R. of N. J.
Williams, M. E., M. M., Reading, Jefferson
Wilson, C. A., M. M., Penna.
Wilson, J. H., Ch. Elec., N. S., Runnymede
Wilson, S. E., Mech. Insp., M. K. T., Ambassador
Wintersteen, John, G. M., Cornwall R. R., Marlborough
Witherspoon, W. R., M. M., A. C. L.
Worman, H. L., S. L. & S. F., Traymore
Wright, B. E., Gen. For., N. Y. C., & St. L., Shelburne
Yenawine, F. S., Ch. Cl. Mech. Dept., Term. Assn. of St. L., Craig Hall
Yingling, W. J., M. M., N. & W., Ambassador
Young, John F., G. F., B. & O., Pittsburgh
Yount, Harry X., M. M., St. P. B. & T., Shelburne

Division VI—Purchases and Stores

Abrams, W. H., Div. Stk., G. M. & N., Haddon Hall
Adams, B. T., Asst. Gen. Stk., Q. C., Strand
Adams, W. J., Gen. Mtl. Sup., Penna., Knickerbocker
Agner, R. L., Div. Stk., Sou., Shelburne
Akin, H. B., Dis. Stk., Con. Nat., Seaside
Anderson, C. C., Stat., N. Y. C. & St. L., Strand
Anderson, H. A., Asst. P. A., Penna., Chalfonte
Andrew, R. M., Gen. Stk., B. & L. E., Princess
Austin, F. S., P. A., B. & A., Traymore
Baile, M. E., Div. Stk., Mo. Pac., Breakers
Baker, J. C., Trav. Stk., Sou., Shelburne
Barron, C. M., P. A., Consolidated Ry. of Cuba, Shelburne
Becker, E. J., Genl. Trav. Stk., S. P., Strand
Betterton, G. M., Asst. P. A., So. Pac., Ambassador
Boldebuck, H. C., Stat., C. B. & Q., Strand
Bolton, G. H., Cl. to P. A., B. & M., Ambassador
Bond, C. Roy, P. A., Swift Refr. Line, Chalfonte
Bossert, W. S., Regn. Marker, Penna., Penn Atlantic
Bower, W. C., Mgr. P. & S., N. Y. C., Ritz
Britt, T. E., Div. Stk., B. & O., Shelburne
Browne, N. J., Stock Book Insp., Penna.
Browne, O. L., Asst. to P. A., A. C. L., Haddon Hall
Bruckert, R. H., G. S., K. & I. Term., Knickerbocker
Burleigh, O. T., Trav. Stk., B. R. & P., Breakers
Buell, C. J., Gen. Stk., D. M. & N., Chelsea
Burger, F. L., Ch. Cl. to G. P. A., So. Pac., Brighton
Bush, H. O., Gen. Lumber & Tie Insp., Erie, Lafayette
Butler, R. J., Cl. St. Dept., R. F. & P., Haddon Hall
Chandler, J. E., Gen. Stk., D. & I. R., Ambassador
Cherry, Chas. P., Gen. Mat. Sup., Penna., Jefferson
Clapp, E. S., Trav. Stk., C. & N. W., Princess
Clark, J. J., Ch. Cl., W. & L. E., Ambassador
Clewell, C. W., Reg. Marker, Penna., Penn Atlantic
Cocke, Clyde, P. A., N. & W., Knickerbocker
Cooley, Leroy, Trav. Stk., C. of N. J., Haddon Hall
Coggins, N. B., Div. Stk., Sou., Shelburne
Coleman, C. F., Gen. Stk., A. B. & C., Belmont
Concannon, H. W., Dist. Stk., S. P., Seaside
Cooper, W. H., Div. Stk., Reading, Franklin
Cornelius, N. S., Trav. Stk., Sou., Shelburne
Cottrill, G. R., Trav. Stk., N. Y. C. & St. L., Ambassador
Couceon, A. J., Secy. Blank Forms, Penna., Traymore
Cumbea, B. A., Div. Stk., C. & O., Ambassador
Curtis, D. C., Ch. Pur. Off., C. M. St. P. & P., Strand
Cragin, F. E., G. S. K., L. A. & S. L., Knickerbocker
Crawford, R. D., G. S. K., Ign. G. C. L., Strand
Dale, A. R., Gen. Stk., F. E. C., Princess
Daniels, B. H., Stk., Penna., Jefferson
Daniels, O. V., Gen. Stk., Penna., Traymore
Dawson, D. E., Asst. G. S., G. M. & N., Haddon Hall
Dawson, V. N., Asst. G. S. B. & O., Haddon Hall
Day, J. M., Stk., S. P., Seaside
Deery, James, Asst. P. A., Penna., Traymore
Dewart, H. M., P. A., C. V., Chalfonte
Dickerhoof, R. A., Gen. Mat. Supr., Penna., Jefferson
Diehl, W. L., P. A., M. & O., Traymore
Dixon, Wm., M. P. Stores, Mo. Pac., Strand
Dods, J. C., Gen. Stk., K. C. T., Traymore
Doolittle, J. M., Tie & Timber Agt., Mo. Pac., Chalfonte
Dumas, A. L., Div. Stk., C. & N. W., Princess
Duncan, J. L., Stk., L. & A., Marlboro
Duvall, L. F., Asst. G. S. K., A. C. L., Ambassador
Ellenberger, E. G., Gen. Matl. Sup., Penna.
Elliott, V. E., Trav. Stk., N. & W., Knickerbocker
Endy, Wm. N., Asst. to Gen. Stk., Reading, Strand
Ernst, E. A., Dis. Stk., C. R. I. & P., Traymore
Farley, R. T., Stk., N. & W., Knickerbocker
Farraday, C. L., Supv., Penna., Eastbourne
Fechtig, F. H., P. A., A. C. L., Haddon Hall
Fleck, H. L., Gen. Supv., Penna., Eastbourne
Fluth, G. E., Dist. S. K., I. G. N. P., Strand
Foley, John, Asst. P. A., Penna., Ambassador
Follette, A. G., Asst. Ch. Mat. Sup., Penna., Chalfonte
Fraser, Donald V., Asst. P. A., M. K. T., Marlborough
Frier, T. J., P. A., Wabash, Marlboro
Fullerton, J. R., G. F. Sup. Dept., M. P., Strand
Fulmer, W. W., G. P. A., Am. Ry. Ex., Glaslyn Chatham
Gann, J. C., Insp. of Stores, Mo. Pac., Strand
Garnett, Jas. E., Div. Stk., Sou., Shelburne
Garnham, L. S., Pur. Dept., Penna., New Belmont
Genther, J. S., G. S., L. & N. E., Pennhurst
Gerber, J. W., G. S., Sou., Shelburne
Gilbert, A. B., P. A., A. B. & C., Brighton
Given, W. J., Div. Stk., M. & O., Haddon Hall
Glosh, W. C., Ch. Cl. P. A., N. Y. C. & St. L., Ritz-Carlton
Glynn, J. T., Ch. Cl. to G. S., C. N., Princess
Graham, R. R., Gen. Supt. Recl., A. T. & S. F., Strand
Griffith, B. W., G. S., N. Y. C., Ambassador
Griggs, H. L., Dist. Stk., P. F. E., Traymore
Griswold, W. W., P. A., W. & L. E., Haddon Hall
Gruss, Thomas A., Loc. Stk., N. K. P. R. R., Knickerbocker
Guernsey, L. C., Asst. P. A., I. C., Traymore
Guy, D. E., Div. Stk., Wabash, Princess
Hagerty, E. D., Ch. Mat. Sup., Penna., Chalfonte
Haller, N. M., Stk., P. & L. E., Haddon Hall
Hammond, F. S., P. A., P. S. & N., Haddon Hall
Hanna, J. L., Gen. Matl. Sup., Penna., Strand
Hargrave, Wm., Sec. to P. A., Penna., Lafayette
Harris, R. C., Gen Stk., Penna., Haddon Hall
Harris, Sydnor, Stk., R. F. & P., Haddon Hall
Hart, B. C., Div. Stk., N. Y. N. H. & H., Haddon Hall
Hartman, Wm. H., Jr., Oc. Mgr. Pur. Dept., Mo. Pac., Chalfonte
Hayden, S. A., Ch. Clk. to O. S. K., M. K. T., Traymore
Hegeman, T. J., Supt. Recl., C. B. & Q., Princess
Hicks, T. L., Stk., Sou., Shelburne
Hinkey, W. M., Dist. Stk., B. & O., Haddon Hall
Hinman, J. M., Dis. Stk., Mo. Pac., Strand
Hirsch, Wm., Regn. Marker, Penna., Penn Atlantic
Hobbs, J. B., Div. Stk., C. R. I. & P., Haddon Hall

Conventionalities

The friends of H. Guy Erb, office engineer of the locomotive department of the Ingersoll-Rand Company, are extending him congratulations. He has just returned with his bride from a honeymoon trip to Bermuda to attend the convention.

The American Locomotive Company is also among those represented at the convention this year by a newly wed couple, in the persons of Mr. and Mrs. H. J. Downes. Although their marriage took place last September, best wishes and congratulations are still in order.

Ellsworth Haring reports that the "Get-Together Dinners" which are held before the monthly meetings of the New York Railroad Club, have been steadily growing in popularity since an arrangement has been made whereby they can be held on Thirty-ninth street, almost directly across the street from the Engineering Societies Building, in which the meetings are held.

E. Von Bergen, general air brake, lubricating and car heating engineer, Illinois Central, arrived Tuesday. He has been an active worker in the Air Brake Association for many years and is now entering his second year as a member of the Executive Committee. He is also a member of the Committee on Brakes and Brake Equipment of the Mechanical Division.

As a respite from several months of strenuous road work in connection with establishing dealer relations for the sale of the vacuum type automotive brake, C. H. Beck, general sales manager of the Westinghouse Air Brake Company, is spending several days at the convention, but not in idleness. With characteristic enthusiasm and vigor, he is demonstrating the advantages of the new brake.

The Purchases and Stores Division established a new precedent Wednesday morning, when radio music and entertainment were provided from the local station, WPG, for the amusement of members and guests until the meeting was called to order. No one was present at the convention hall early enough to take advantage of the early morning setting-up exercises. The P. & S. folks, however, are a healthy looking bunch, and don't need 'em.

C. E. Chambers, superintendent of motive power of the Central Railroad of New Jersey, arrived Tuesday morning with Mrs. Chambers and their daughter, Helen. Mr. Chambers is numbered among the Mechanical Division's most active workers, being a member of the General and several other committees. Just when he will find the time to show Mrs. and Miss Chambers the exhibits and sights of Atlantic City is a question.

One of the busiest men at the convention is S. G. Down, vice-president off the Westinghouse Air Brake Company. Not only is he supervising the activities of the large corps of representatives who are promoting this company's affairs at this convention, but, as chairman of the R. S. M. A. exhibit committee, he is maintaining close co-operative contact with all exhibitors. He is never too busy, however, to recognize old friends.

Walter C. Sanders, general manager, Railway Division of the Timken Roller Bearing Company, and Howard L. Spohn, vice-president of the Gardner Advertising Agency, who won the bridge championship at the A. E. R. A. convention in Cleveland last year, challenge any bridge players for the championship of this convention. Messrs. Sanders and Spohn can be reached at the Ritz-Carlton Hotel.

R. G. Henley, who was recently appointed superintendent of motive power of the Norfolk & Western arrived Tuesday morning. One of his prides is the Roanoke, Va., machine and erecting shop which was built under considerable difficulty several years ago. In addition to carrying on the regular repair work, the Norfolk & Western also built ten new locomotives, while the new shop was in the process of erection over the old shop and on the same ground that the locomotive work was being performed.

Frank W. Edmunds, of Craft, Inc., and R. E. Trout, of Thomas A. Edison, Inc., are convention visitors for a day or two. They are here completing arrangements for the convention of the Signal Section in September, which will be held at the Ambassador Hotel. Mr. Edmunds is one of the record holders for convention attendance, this being his forty-seventh Mechanical convention. While he is not among the exhibitors this year, he is thoroughly enjoying the gladatorial atmosphere and the pleasure that comes from geeting old friends.

C. H. Kelly, district store keeper, Lehigh Valley, Sayre, Pa., arrived at the convention hall right on schedule time, 9.00 A. M. Wednesday. That is the way, he says, that the Lehigh Valley runs all its trains. Those who attended the convention at Haddon Hall two years ago will remember the model of shelves and trays, which was built and sent to the convention by the stores dedepartment of the Lehigh Valley, to illustrate its system of unit piling and bin labeling. When asked what the Lehigh Valley had as a surprise exhibit for the convention this year, Mr. Kelly replied, "Just wait until we start something."

It is getting to be a regular occurrence nowadays for railroad mechanical department officers to take trips to Europe to look over the latest developments in motive power on that continent. The latest report is that P. W. Kiefer, chief engineer of motive power and rolling stock, New York Central, is planning an European trip for the special purpose of inspecting some of the new locomotive developments in Great Britain, France, Switzerland, Germany, and Sweden. He expects to leave sometime in August or September and will be gone from six weeks to two months.

H. B. Oatley, vice-president of the Superheater Company, New York, is convalescing from an operation for appendicitis. Although he claims to be a "semi-invalid," he appears to be in the pink of condition. However, he insisted on riding to Atlantic City Monday in the rear seat, with his son Donald as chauffeur and an associate editor of the *Railway Age* as footman. Donald Oatley is home on his vacation from the University of Vermont, his dad's alma mater, where he is studying mechanical engineering. He expects to remain in Atlantic City for a few days during the convention.

As the years go by the Atlantic City people, from mayor to newsboy, seem more and more happy to greet our return to their city. Yesterday morning a small urchin, with a bundle of "your own home papers" under his arm, approached a railway man and did his best to

make a sale. "C'mon, get a paper, mister," urged young Atlantic City. "No, son, I can't this morning; I haven't any money." "Never mind that," exclaimed the millionaire-to-be, "if you see me later, hand it to me; if you don't, oh, well, never mind." The railway man, not to be outdone, promptly took the paper and handed the smiling young merchant a quarter.

Word has just been received that J. T. St. Clair, engineer of car construction of the Santa Fe, resigned on June 15 to become vice-president and general manager of mining properties in Halifax, N. S., in which he is interested. Mr. St. Clair has long been active in the work of the Mechanical division, giving particular attention to tank cars and the design of standard car equipment. He was a member of the Sub-committee on Design of the Car Construction Committee and a member of the Tank Car Committee. He was also chairman of the Committee on Preservation of Lumber of the American Wood Preservers' Association, and vice-president of the Western Railway Club.

I. C. Bon, superintendent of scrap and reclamation for the Wabash, is one of the active workers on this year's reclamation committee of the Purchases and Stores Division. He comes prepared not only to prove that he has an unusually interesting operation at Decatur, Ill., but also that railway men are ever hunting for new ideas for stores efficiency. He started a visitors' register at the reclamation plant on March 17 last year and continued it until March 17 of this year; during this time no less than 281 visitors attested to their inspection of the facilities by affixing their signatures to the book. While this registration was largely comprised of visitors from railroads in the neighborhood, a considerable number are reported to have come from distant parts, particularly from the south and southwest.

There seems to be a tendency on the part of railway supply associations to make the office of secretary a permanent one. We believe the long distance champion and the holder of secretaryship honors is none other than Fred Venton of the Crane Company, who as usual will be found at his booth on the pier this year. As nearly as we can remember, Mr. Venton is secretary of the Railway Equipment Manufacturers' Association which meets with the Traveling Engineers' Association and he has held this job for a number of years. He is secretary of the new Railway Equipment Exhibit Association of the American Association of Railroad Superintendents, and was recently elected permanent secretary of the Air Brake Appliance Association which meets in conjunction with the Air Brake Association.

John Draney, engineer of the Lackawanna Limited of the D. L. & W., president of the Lackawanna Veterans' Association, father of the veteran employee movement, and prominent in many other activities, got to Atlantic City bright and early Monday morning. He had a most interesting experience a few weeks ago when his friend, Captain Harold A. Cunningham of the ocean liner, the Leviathan, accepted an invitation to ride on the engine from New York to Scranton. The railroad officers at Scranton had arranged a big luncheon party for the "Captain," but he beat them to it and had a lot of fun eating en route from John's dinner pail; and then instead of returning to New York in a parlor car, he insisted upon riding back on the locomotive. It is reported that when Captain Cunningham asked John why he did not take advantage of the opportunity to retire, John promptly stood on his head, a thing, incidentally, that he does with ease. This inspired the following verse, which appeared in the NEWARK EVENING NEWS:

"You are old, Father William," the young man said,
"And your hair has become very white,
And yet you incessantly stand on your head—
Do you think at your age it is right?"

Luther H. Steger, who represents the International Railway Supply Company in Australia, is visiting the conventions. He arrived in the United States on May 31 and will remain until October. Mr. Steger brings interesting information about W. Webb, formerly general manager of the Missouri-Kansas-Texas Lines, who since 1922 has been chief commissioner of the South Australian Railways and who is the only railway officer who received his training on the United States railways that ever was selected to manage a system of railways in Australia. The railways of South Australia are owned and operated by the government and Australian political conditions present many difficult problems to a railway officer of American training, but all who are familiar with his work agree that Mr. Webb has made a very great improvement in the physical condition and operating results of the South Australian Railways. Mr. Steger adds the news, which already had been heard by some of Mr. Webb's friends in this country, that he has greatly improved his golf game in Australia. The term for which he was originally appointed will expire next November, but it is believed the South Australian government will prevail upon him to remain and serve another term.

Clement F. Street, prominent in the early development of the mechanical stokers and known as the "father" of this vital locomotive accessory, is present at the convention this year in the capacity of consulting engineer for the American Steel Foundries. Mr. Street has been studying the problem of grate design and construction during the past two years and the results of the investigations undertaken are almost ready to be made public. 841

Howard Melaney, known as the "singing fireman" from the Yellowstone division of the Northern Pacific, is expected to arrive from San Francisco on June 25. This well-known tenor singer, with the pleasing personality, is scheduled to contribute to the entertainment program next week.

Included among those attending the Purchases and Stores meeting are W. A. Hopkins, general purchasing agent, Missouri Pacific, who has recently returned from a trip to the Hawaiian Islands, and G. E. Scott, purchasing agent, Missouri-Kansas-Texas, who has just returned from a trip to Europe. What the attraction was that took Mr. Hopkins to Hawaii has not been ascertained nor why Mr. Scott went to Europe instead of to Africa as originally planned. Is it possible that a message which Mr. Scott received from Africa changed his mind, the message stating that the one African railway at least was found to be already following the unit piling practiced to perfection, judging from the fact that everything there is dumped in one pile.

One of the visitors to the rolling stock exhibit in the Reading passenger train yard after looking over the locomotives and "Jim Crow car" came to the 65-ft. all-steel gondola. He sized it up from end to end, inspected its load of 62-ft. beams, remarked, "Judas Priest", and walked away. Wonder what his opinion was!

Purchasing and Stores Officers Open Annual Meeting

Addresses by Railway Heads Feature First Day's Session of Ninth Convention——San Francisco Bids for Next Meeting

THE ninth annual meeting of Division VI—Purchases and Stores, American Railway Association, was opened in the Vernon Room of the Haddon Hall Hotel at Atlantic City at nine o'clock Wednesday morning by the chairman, A. S. McKelligon, general storekeeper, Southern Pacific, Pacific System, with upwards of 400 delegates and guests present. Immediately following the opening ceremonies, during which the General Committee occupied the platform, an address was made by J. H. Waterman, a past president of the Old Railway Storekeepers' Association and life member of the Division. This was followed by addresses from W. G. Besler, chairman of the board of the Central Railroad of New Jersey, and vice-president of the American Railway Association, and by Chairman McKelligon.

Stimulating talks were also made by R. H. Aishton, president, A. R. A., and by L. R. Powell, Jr., president of the Seaboard Air Line. These were supplemented by reports of the committees on rules, classification of material, uniform accounting and on the control of material requirements. A paper on storekeeping on railway terminal properties by E. H. Polk, district storekeeper, Southern Pacific, was also read.

Prior to adjournment, an invitation to hold the next meeting at San Francisco was extended the Division by a representative of the Chamber of Commerce of that city. Committees on resolutions and memorials were selected as follows:

Resolutions—P. L. Grammer, assistant purchasing agent, Penn.; E. A. Workman, manager purchases and stores, C. of N. J.; and G. M. Betterton, assistant purchasing agent, S. P.

Memorials—B. T. Adams, assistant general storekeeper, I. C.; J. L. Sullivan, general traveling storekeeper, U. P.; and W. M. Portlock, purchasing agent, S. A. L.

The Railways and National Prosperity

Carriers pictured as big factor of better business and supply officers praised in address to Div. VI

By W. G. Besler

Chairman of the Board, Central of New Jersey, and First Vice-President, American Railway Association

W. G. Besler

I am glad to meet with you today and again to pay tribute to the worth-while character of the work which is being done for the benefit of all of the railroads by the members of this division of the A. R. A. In the presentation of the seventeen or more reports of committees, we have again that painstaking and careful study which has been the outstanding characteristic of your services.

I saw recently a statement that since 1921 our national income has increased about 50 per cent. and is now approximately ninety billions of dollars a year. This is the actual earned income and has been brought about by the increased productivity in the performance of the industries of this country.

The railroads have not been behind in their part of this performance. In my opinion, they have contributed to a marked degree—witness the vast improvement in the movement of traffic, without which the so-called "hand to mouth" buying would have been impossible, also the release of large amounts of capital, formerly tied up in goods stored and held on bank credits, which has become available and is felt all the way down the line of commercial activity. I believe a large share of the credit for this condition belongs to the railroads for giving the initial push.

Railway Purchases Large

A year ago, I gave some statistics prepared by the Bureau of Railway Economics, covering railway purchases in 1926. Similar figures for 1927 disclose that the aggregate amount expended by Class 1 railways for materials and supplies of all kinds was $1,395,928,000.

The largest proportion of this total expended by the railways for any one general class of supplies was for fuel, the amount being $438,821,000. Iron and steel products came second, the total outlay being $432,604,000. Purchases of forest products called for an expenditure of $175,729,000, while miscellaneous supplies cost $348,774,000.

Fuel purchases included 130,190,000 net tone of bituminous coal, 3,199,000 net tons of anthracite coal, and 2,765,259,000 gals. of fuel oil, as well as smaller amounts of coke, wood and fuel for illumination purposes. The largest single item included in iron and steel purchases was steel rails. A total of 2,278,000 gross tons of new and second-hand rails were purchased. The next largest expenditure for iron and steel products was for frogs, switches, track fastenings, etc., while the third largest was for locomotive and car castings, couplers and the like.

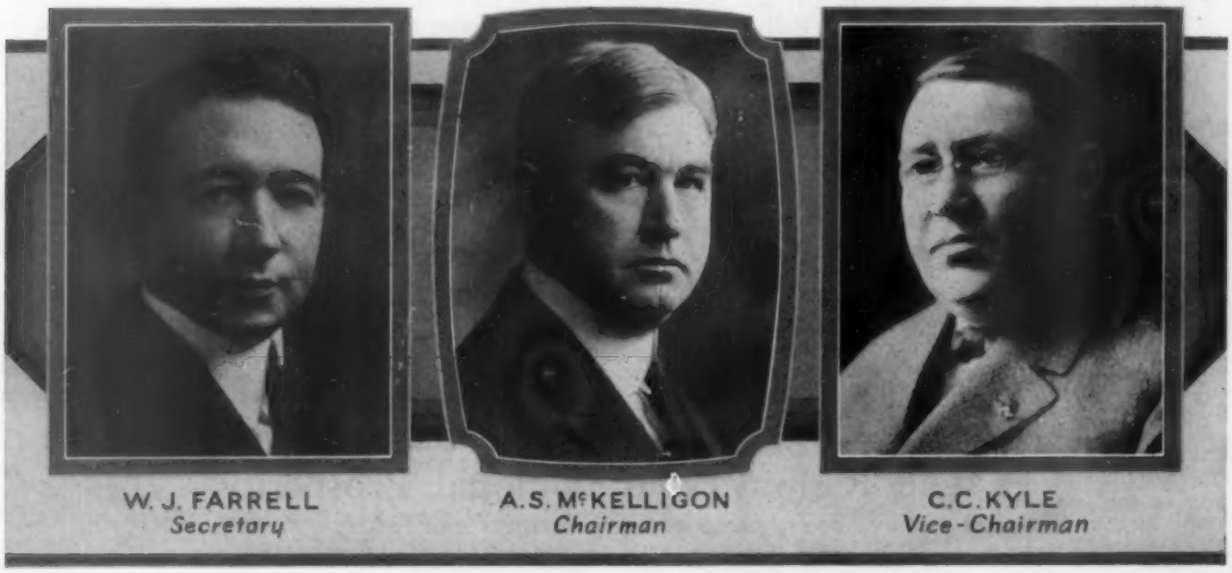
The total for forest products included 97,135,000 cross ties, both treated and untreated. Purchases of bridge and building timber and lumber, lumber for equipment, and the like, aggregated 1,285,289,000 bd. ft.; switch and bridge ties, both treated and untreated, 326,735,000 bd. ft. Ballast of various types was purchased to the extent of 28,430,000 cu. yds. Cement purchases aggregated 2,673,000 bbls.

Railway purchases of bituminous coal last year represented a total expenditure of $346,814,000, or 24.8 per cent of the aggregate cost of all railway materials. The second largest item, in terms of dollars, was cross ties, for which $108,215,000 was spent. This was 7.8 per

cent of the total purchases in 1927. Steel rails occupied third place, with a total expenditure in 1927 of $101,567,000. This was 7.3 per cent of the total. Fuel oil stood fourth, with $78,472,000, or 5.6 per cent of the total. The fifth largest item was frogs, switches, track fastenings, etc., which accounted for $72,032,000, or 5.2 per cent.

It is estimated that in 1927 the railroads directly purchased four per cent of the total anthracite coal output of the United States, 25 per cent of the bituminous coal production, and more than 17 per cent of the total lumber cut. If the indirect purchases of the railroads are taken into account, such as lumber for locomotives and cars ordered by the railways from equipment companies, the total utilization by the railways of the total timber cut of the country would be close to or more than 25 per cent.

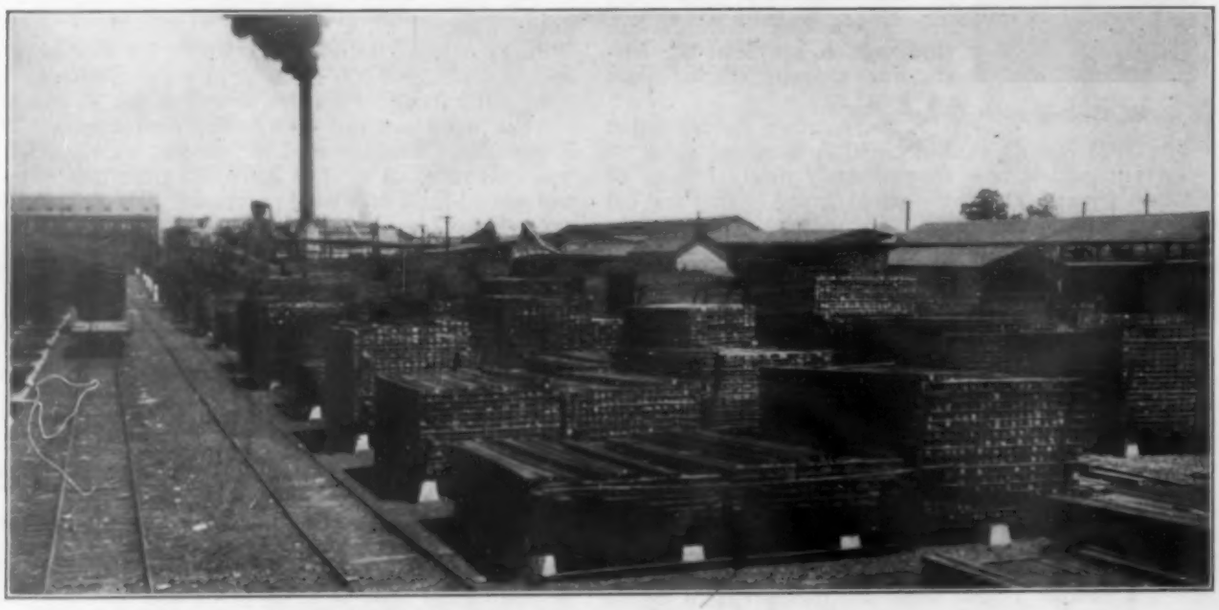
The railroads utilized 19 per cent of the total iron and steel output of 1927. Restricting the comparison to steel rails, the proportionate railway utilization was 86.7 per cent. In the case of track accessories, the railway proportion was 93.7 per cent. Direct purchases of cement by the railways absorb less than two per cent of the total cement production of the country, but this percentage would be higher, if the extent of indirect utilization through contract work were known.



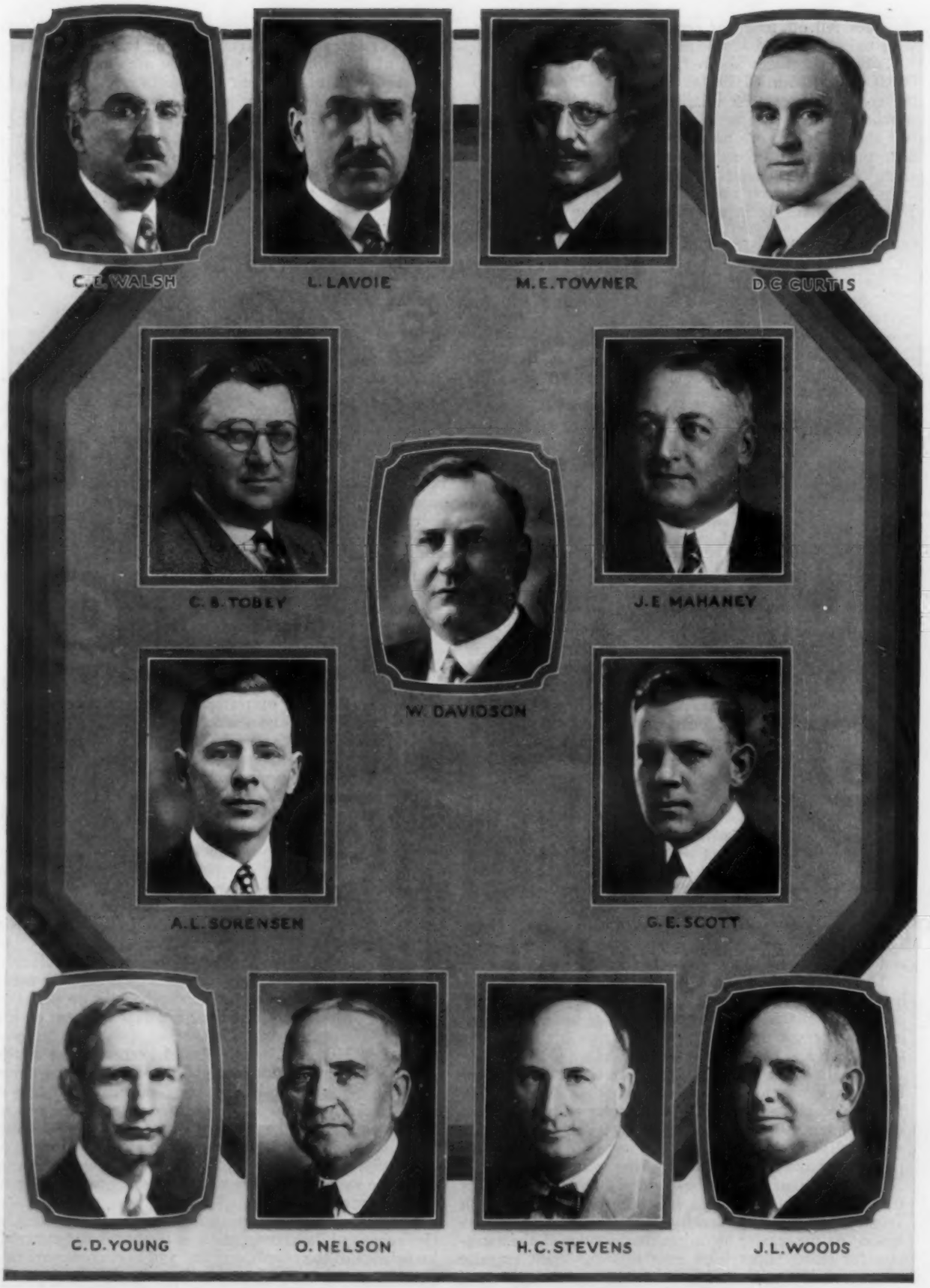
Officers of the Purchases and Stores Division

Volume of Purchases Smaller

Total railway purchases in 1927 were somewhat smaller, in terms of dollars, than in 1926. This is because railways handled a smaller traffic in 1927 than in 1926 and that both their revenues and their expenses were lower than in 1926. Railway traffic in 1927, in the freight, passenger and other services, was from three to five per cent lower than in 1926, while total operating



Lumber Yard at Rocky Mount, N. C., on Atlantic Coast Line



Members of the General Committee of the Purchases and Stores Division (C. C. Dibble Missing)

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revenues fell off four per cent, and operating expenses were reduced more than two per cent.

Railway purchases showed a decrease from $1,559,000,000 in 1926 to $1,396,000,000 in 1927, or about 10 per cent. The greatest relative decline occurred in the purchase of iron and steel products, where the reduction was about 15 per cent. Fuel purchases declined seven per cent, purchases of forest products fell off about six per cent, while miscellaneous purchases declined 11 per cent.

In your discussion and deliberation of the excellent reports you have the benefit of the brightest minds in the service which cannot be otherwise than helpful. New and better ideas and thoughts, will be translated to the benefit of the railways by whom you are employed, and who send you here as their representatives to give and to receive valuable inspirations.

"All work and no play makes Jack a dull boy and Jane a stupid girl." You are here in Atlantic City—the playground of the East. Make the most of this opportunity, enjoy yourselves, and go home rested and refreshed and with aspirations and inspirations to accomplish greater and better things.

The Purchases and Stores Problem

Supply officers likened to merchants——Praised for contributions to rail efficiency

By L. R. Powell, Jr.
President, Seaboard Air Line

L. R. Powell, Jr.

There is no phase of railroading in which it is easier to lose large sums of money without ready determination of the cause, than in the purchase and use of materials. Cordial relations with employees can be maintained by fair treatment and a sympathetic understanding of their aspirations. An American citizen is basically fair and hence a misunderstanding can be and will be avoided unless prejudice and passion rule in the place of justice, on both sides. On the other hand, material purchased for use is a definite subtraction from the treasury. If not used, it is a dead loss. If it does not serve the purpose for which it was purchased, it is a partial or total loss. A dollar spent for unnecessary material, is wasted.

With a gross revenue of something over $6,000,000,000 in 1926 the Class I railroads of the country used in their operations $1,600,000,000 worth of material and carried a working balance of material and supplies, $550,000,000, which represented about a four-months' stock. The money spent in materials was approximately 27 per cent of the gross revenues of the railroads of the country and exceeded the net return earned on their capital investment, which amounted to only $1,200,000,000, or 4.99 per cent on an investment of $24,000,000,000. These figures show conclusively the importance of the proper and economical purchase and use of material.

The strides the railroads have made in the economical handling of material since Government control have been enormous. Railroad executives are becoming more impressed every day with the importance of the proper supervision and control of materials and supplies. While in 1926, the railroads handled 8 per cent more freight business, in revenue ton miles, than they did in 1920, they accomplished this with a decreased investment in materials and supplies of 27 per cent. This remarkable showing is largely, if not wholly, due to the efforts of the purchasing and supply officers of the railroads.

The history of the purchasing and supply departments of the American railroads has been a gradual growth from a subordinate capacity to one of major importance. As the science of railroading developed, the necessity for closer supervision over this important expense was recognized. The result has been the development of a trained organization that has contributed as much to the present unsurpassed service the railroad companies of this country are giving, as any other department.

In actuality, there are two departments—the department of purchasing and the department of supplies or stores. But their functions are so closely related that railroad executives have realized the necessity of coordinating them under one head. The executive officer in charge of purchases and supplies on a railroad, must be a great merchant. He must keep in close touch with the economic conditions in the country. He is charged with the responsibility of spending vast sums of money to the best advantage.

Trained Organization to Handle Supplies

The army of trainmen, mechanics and track forces have to have suitable material promptly and conveniently if they are to function as they should. Too much material is a waste. A lack of material is an equal waste. It takes a trained organization to strike the happy result of supplying each workman with sufficient material to keep him busy, thus obtaining the best results from his services, and yet not wasting money by extravagant purchases of unnecessary supplies. To effect this result it is absolutely essential, that the purchase and control of all material on a railroad should be under the control of one officer. He must keep in touch and be acquainted with the plans of the using department. His stock must, as far as practicable, be concentrated at strategic points.

The using department must be held strictly accountable for advising him of their needs in ample time for him to supply them. Any unused material should be returned to his care, thus enabling him to avoid unnecessary purchases. Up to the time the material is actually used, he should recognize his responsibility for the proper conservation of it and be jealous of any infringement on his power to control it.

He and his organization should keep in close touch with the changing standards of his railroad. Enormous sums of money have been lost by railroads adopting a new standard of material or practice without due regard having been given the stock of material on hand. Such leases can be generally attributed to lack of proper coordination between the supply and using departments. It can be avoided by close co-operation between the two departments.

Early advice by the using department of its needs, a close check of the consumption of the particular material, knowledge of the supply on hand and intelligent purchasing, are necessary, and unless these fundamental principles are exercised, an economic waste of the railroad's resources is inevitable.

Conflicting opinions in aggressive railroad organizations as to the suitability and economy of certain classes of material, are bound to arise. The chief railroad executive must use sound judgment in deciding these controversies. He must give due regard to the practical opinion of the using department, but yet he must not overlook the business judgment and experience of his supply officer. Both are working to the same end, namely, the conserving of the company's resources.

Mutuality Essential

A mutual understanding of each other's responsibilities is necessary. The executive officer of the railroad must see that this understanding exists.

I have gathered these ideas from observation of the successful results obtained by various railroads. Some have achieved more than others. Invariably, I have found that the successful railroad is one that has a strong and competent purchase and supply organization.

Never was there a truer saying than that "a chain is only as strong as its weakest link." The link in the chain of a railroad organization as represented by the supply department, is one of its most important ones. Unless it functions at the highest efficiency the results that will be obtained in that railroad organization will be disappointing.

The growing tendency of railroad officers to gather together and exchange ideas is invaluable to the investors in railroad securities. The accumulated wisdom of the ages is not concentrated in any one man. Every free and frank exchange of ideas cannot but be helpful to anyone who has the opportunity of participating in such discussions.

One of the greatest aids to the development of cheap and efficient transportation in this country was the organization of the American Railroad Association. The solving of many of the complex transportation problems that have confronted this country has been the result of the mature deliberations of the members of that Association.

Every year, I am glad to see, its controlling influence is being extended. Its work is systematic. Organized as it is by representatives of the various branches of railroad endeavor, its work is of incalculable value and I consider that the work performed by the representatives in the Purchase and Stores Division, is second to none. Too much praise cannot be given to the active members of this Division who give freely of their time and energy to the proper determination of the many intricate problems that arise daily in the economical purchasing and disbursing of the vast quantity of material used by the railroads.

The Railroad Today and Yesterday

Astonishing changes in supply department conditions have occurred in last fifty years

By J. H. Waterman

Life Member, Division VI—A. R. A.

J. H. Waterman

Your chairman invited me to make an address at this convention and I wondered what subject I should take. I have decided to talk to you on "Times have Changed." When I went to work for the Burlington, nearly fifty years ago, I saw many freight cars classified as 20,000 lb. or ten tons. A railroad could not live today if it attempted to operate freight cars that would only carry that load. I remember in the early eighties when the Burlington got a lot of new engines for the lines west. They were delivered at Plattsmouth and the whole town went down to see those wonderful engines. They are now called "Class A" engines and can only handle about five passenger cars. Hundreds of miles of 45 lb., 48 lb., and 52 lb. rails were used. Now we are using 90 lb. to 130 lb. rails.

Few railroads then had a store department. The master mechanic at the various shops was at the head and he had a clerk working under him who was assigned the duty of looking after and ordering the supplies. I remember quite well when the store department, lines west, was separated from the mechanical department. There was quite a little friction between the mechanical department and the store department at that time. The master mechanic felt that something underhanded had been done to appoint a storekeeper and put him in charge of supplies only. The young man who kept up the stock in the store department was the messenger who carried the mail to and from the depot. He kept up the stock when he did not have anything else to do.

Supplies Ordered By Guess

Everything was ordered by guess. There was no definite rule followed and what was true on the Burlington, was true on most of the railroads in this country fifty years ago. Times have changed. Today, the general storekeeper ranks with the general officers of the railroad, and on many railroads the man in charge of purchases and stores is a vice-president.

Until the Railroad Storekeepers' Association was organized in 1904, very few knew anything about a stock book. There were various ways of ordering and keeping up the stock, but there was no regular rule, nothing to guide the person ordering the material. Today, a railroad storekeeper who attempts to handle his supplies without a stock book, will not last very long in his position. It is a physical impossibility to properly operate a store department of a railroad without a stock book, and most of the general storekeepers have a master stock book.

What has been accomplished by the proper use of a stock book? One road had over fifty million dollars' worth of supplies. By the proper use of a stock book, they have reduced that to thirty million. Another great trunk line that had a thirty-six million dollar stock, have reduced it to twenty-five million. A third had a twenty-five million dollar stock which has been reduced to twelve and a half million dollars.

Fifty years ago the supplies of a railroad were either scattered through the shops and over the shop grounds, or were placed in an old box car body or some building

that could not be used for any other purpose. It was a hit-and-miss arrangement. Today, you travel from the Atlantic to the Pacific and the store houses are attractive places and the offices clean, well lighted and cared for. The material is placed in bins or racks, and in most store departments unit piling has been adopted as standard. Inventories are taken, not when the material has became exhausted, but every month, by classes.

Fifty years ago material was carried into the shops by man power. I have seen fifteen or twenty men trying to get a heavy casting or rail into the shop to the lathe. Today, the store department of a well-organized railroad uses gasoline or electric trucks with cranes to handle heavy material, and the material is taken from the store department or store house, and delivered direct to the machine where it is used.

Fifty years ago there were always several men trailing each other from the shop to the store department counter, or the place where supplies were stored, helping themselves, or being waited on by men who had little or no knowledge of the material which they were handling. Today, you seldom see a shop man going to the store house for material. The requisition is made for what is wanted in the shop, it is picked up by a messenger, taken to the store house, and from there it is delivered by trucks to the point where it is to be used. Times have changed, and today, while all departments have moved forward, none have moved more rapidly than Division VI.

The Supply Officers and the Railway Situation

Opinion expressed that stocks of material can be further reduced
———Tribute paid to appliance show

By R. H. Aishton
President, American Railway Association

R. H. Aishton

I need hardly assure you that it is a very great pleasure for me to be here with you once again today at your ninth annual meeting, and I want to also say it is a tremendous gratification to me also that I can meet with you nine times and come back without feeling that I have worn out my welcome.

Mr. McKelligon said I was down for an address. Well, it isn't any such thing. I am just here to have a good friendly talk with you. It is a pleasure always to meet with such an organization as yours. It gives a person a feeling of affluence to stand in the presence of a lot of men who spend $1,395,000,000 (I think it is) for supplies. I get a tremendous kick out of it, out of looking into the faces of a bunch of fellows with such a responsibility as you have.

I wonder sometimes if the great public of these three countries that you represent—Canada, Mexico and the United States—realize just what a tremendous influence these great expenditures you make have on the prosperity and the general condition of this country.

We have heard a good deal of late, particularly in Washington, about the effect that a number of these governmental operations are going to have on increasing and continuing the general prosperity of this country. Do you realize that the amount of money you spend every year would wipe out the entire state debt of the forty-eight states of the Union? That gives you some picture of the situation.

You have heard a good deal lately about public improvements. Take flood control, for example. Congress has just appropriated a very large amount of money for flood control—a very necessary thing, a thing that the nation would be deficient in if it did not appropriate the money. But one of the principal arguments in connection with the flood control is that the expenditure of that amount of money—I forget now what it is, something like three or four hundred million dollars—would mean a continuation of and an increase in the prosperity of the United States for the next ten years. Yet you gentlemen spend more for the fuel for the railroads every year than that ten years' expenditure for flood control. Do you suppose that the people of this country know what the factor is that you gentlemen are responsible for?

We have heard a good deal about Muscle Shoals, about Boulder Dam—and the same arguments are used there: that these expenditures of money are going to mean increased prosperity and all that kind of thing. And you gentlemen are spending every year for iron and steel as much as all those expenditures amount to.

I was sorry to have to interfere with your program today, Mr. Chairman. I had a previous appointment that I couldn't get away from and I had to make good. Last time I was here, I addressed you at nine o'clock, and took an express chair, by the grace of these supply people, down to the Pier, and got in there about half an hour late, and I promised them that I would be on time this year—so that is my explanation for being late. And it is my great regret that I didn't come in in time to hear the wonderful talk that I know Mr. Waterman gave you (because his talks are always an inspiration), and I am sorry I didn't hear the talk that Mr. Besler gave you. I did have the very high privilege of listening to the wonderful address Mr. Powell gave, and I heard him express his appreciation of the work of this Division, and I just want to supplement his statement and say a word about the devoted attention that has been given by the chairman of your division, and the past chairman of your division, and what your committees and the chairman of those committees have done.

I wonder sometimes if you people who are not directly familiar with the work of the committees—understand the very large amount of thought and time and study that is given to this work, not as representatives having in their vision just the many things of their own railroads, but really as statesmen, looking at these matters from a statesman's point of view, to determine not only what is good for their own railroads, but what is good for the general transportation system of this country.

We hear a good deal about transportation problems and about the railroad situation, and all that kind of thing. You know what the conditions were back nine years ago, before your Division was organized. They couldn't have been much worse. Every man's hand was

against the railroads. The public generally were disgusted with the railroads. We had just come out from under government control and the railroads were all broke. And what has happened in the period since then? What has happened is an epic of transportation. One of the greatest things that has ever been accomplished in this country is the bringing of the transportation of this country to a point where it met with the approbation of every section of this country insofar as service, efficiency, and the economy with which that service is performed, is concerned.

You might think that all the problems are behind us, that there is nothing left to do. Believe me, there are more problems facing the railroads today that you folks are going to take a part in, unless I miss my guess, than there have been in the past six years.

What are those problems? One of the principal problems is the revenues of the railways. What are we faced with? For the year 1927 I think the figures show that there was a smaller net return, after paying all expenses, per dollar of capital invested than at any time in the last twenty years, with the single exception of the disarranged period during the war. That is disquieting enough, but there are other disquieting things in addition to that.

There is an effort all over this country, for instance, still further to reduce the revenues of the railroads.

In addition, we are faced with motor truck competition, motor transportation, free roads, and all that kind of thing. I am not one of those who go around hanging up crepe about the motor-car situation and the motor busses—as a matter of fact, I will say to you confidentially that I think the railroads have gotten a good deal more out of the development of motor trucks and the private automobiles, if you please, through the great communities they have developed, through the raw materials used, and through the money put into circulation as a result of those things than they have lost in the way of traffic, or than they will ever lose through the operations of these vehicles. There is, nevertheless, a problem there, and it is a problem that you people have got to solve, and that all the other divisions have got to help solve. The problem is how the railroads can adapt that form of transportation to co-ordinate it with their own transportation, because, after all, the public of this country, with its vast distances, has to depend in the main for its transportation on the railroads. And anything that tends to weaken the transportation machine not only weakens that machine—your industry, that you are particularly interested in—but it also weakens this nation among the other nations of the world. Therefore, it is to the interest of every citizen to keep every form of transportation up to its greatest measure of efficiency.

We have with us water transportation and, more than that, operation by the government, through the Inland Waterways Corporation. The expressed intent of all these efforts is to cheapen transportation and this necessarily has its effect on the railways. The railroads are not in opposition to other forms of transportation, provided they are in the public interest, but they believe that in the public interest all forms should be at least on a fair basis of competition with all elements of the cost taken into consideration. I don't know what the final answer is.

You have air transportation. I read in the paper a day or two ago that some woman went across in twenty hours and forty-nine minutes. What are they going to do tomorrow? What are they going to do next month? What are they going to do next year? That is the thing you have got to anticipate.

There is just one lesson that we have to get from all these tendencies toward decreased revenue, and that is that we must foresee what the effects of these things are going to be, and, above all, we must dig our toes into the ground on the work that you people have been doing for the last few years, and which has produced such wonderful results, as cited by Mr. Powell. I think he said that there had been a reduction of twenty-seven per cent in purchases and stocks on hand, and all that kind of thing. That is a wonderful achievement, but you have got to make it more than that if you are going to meet this situation that you are confronted with.

So much for the problems. I am an optimist. Everything is going to come out all right, and the reason it is going to come out all right is because I never knew any emergency to arise that could not be coped with by bodies of railroad men getting together, counseling together on the proposition, and analyzing it and acting on their conclusions.

I have only this further thought to leave with you. I spoke to you about the work of your Chairman and the various other Chairmen, the work of your Committees, and all that kind of thing. You gentlemen go over that work when you come to these meetings. You decide that this is a good thing, or that that is a good thing, and that it ought to be done. The only suggestion I have to offer is to translate that thought into action when you go home. There are a whole lot of things with regard to which this association has gone on record. Unless you have a better way to handle it than that adopted by the association just don't be in the rear guard. Be up and coming, and if it is good, let us put aside all precedents and conventions and see if we can't make it effective.

I spoke about your being a spending organization. As a matter of fact, you are a saving organization, and the savings that you have effected are tremendous. As I understand it, your work and the work of all the other divisions of the association is, by spending, to save—to buy better locomotives, better cars, a better quality of materials, more suitable material, and, as Mr. Powell very well said, avoid "dead horse." "Dead horse" never produced a dollar. And when you spend a dollar, always have in mind that you want to get out of it $1.50.

In that connection, I think this association and your convention are to be congratulated that they have as one of their principal supporters an organization such as the Railway Supply Manufacturers Association, which has put up such a wonderful exhibit here at Atlantic City. I hold no brief for them. I was just as hard-boiled as any of you fellows ever were about supply men. I was always "in conference" or somewhere else when a supply man came around. Nevertheless, I have been to a great many exhibitions, and I never have seen such a wonderful exhibition as these supply men have put up for your benefit because, after all, they are the people who have for years, through their efforts endeavored to show you and to sell to you—I will agree with you on that—things that do produce economies and do make for efficiency.

I am just bringing that thought to you, not at anyone's suggestion, but because I believe that it will be well worth while for any of you folks to spend the time down there in looking into things. I have been out of the railroad business for nine years, yet I took a hurried walk down there this morning, and I saw two or three things that, if I had charge of a railroad, I would tell my mechanical officers and my purchasing department to look into. I would say to them, "That appeals to me. There may be something in it. Investigate."

I don't know that I can offer you any suggestions

about your line of work. I have been out of the railroad business for nine years and I don't undertake to know anything about the details of your work. There is one thing that I want to call to your attention, and it is in the line of increasing revenue. The American Railway Association has just been authorized by the board to make an active effort, because they realize that what I have said regarding the necessities of the situation are facts.

We have increased the capacity of freight cars so that the freight car today is measurably a heavier carrier (I forget the figures, I think the average is about 44 tons) than it was a few years ago, and yet the load carried per car of carload freight—I am not referring to l. c. l. or anything of the kind—is less today than it has been for the last five years. One of the surest measures of increasing revenue without increasing cost (and that is what we are all after) is to get more load in a car.

I happened to look at some figures the other day of some lumber, for example, that was shipped from the Puget Sound country down into the Middle and Central West for a railroad. There are a great many such cars, because the railroads after all, buy about 17 per cent of all the lumber produced in this country, outside of what is spent for contract work. On one car of minimum load the earnings were $288. On another car, loaded at the same plant practically, and to the same destination, with 77,600 lb. the average earnings were $559.

If you will keep in the back of your head that on all this material of which you gentlemen control the shipments, if you will try to secure in every way possible through your efforts with the shippers, through your efforts with the railroads, and in every other way, the maximum loading of that equipment, and if that could be continued in every branch of effort throughout the railways, we would get a wonderful result in decreased costs.

I am just leaving that thought with you, to see what you can do, if anything, about it.

Mr. Chairman, I have talked too long. I just want to leave this message with you, not as coming from me, but as coming from the executives of these railroads. We had a meeting here in Atlantic City last week. We discussed all these matters with the American Railway Association, including the activities of your division, and I was asked by them to express to you and to this division the hearty appreciation of the executives of the railroads of the country for the work that this division has performed and is performing, and I want to leave that message with you. If there is anything I can do, if there is anything the Board of Directors of the Association can do to help you in the work you are undertaking, all you have to do is to let me know.

Remarks by W. H. S. Bateman

Lack of exhibit space in Marine Hall prevented the showing of latest in airplane developments

One of the duties that devolves upon the officers of our association at the conventions is to pay a visit to the various divisions that meet here, to let them know that we are interested and fully appreciate their interest in the exhibit.

I had the pleasure of hearing Mr. Aishton speak this morning before the Mechanical Division, and he paid a compliment to our organization which I know will make our men feel sort of puffed up when they hear it. Mr. Aishton said that we have here in Atlantic City today the greatest exhibition of its kind that has ever been put on in this country or in any other country. He compared it with the great exhibition that he visited at Wembley, England, and said that that exhibition, that is, the portion of it which would be of interest to railway mechanical men or railway purchases and stores men, could be put in one end of the space we have provided here for you gentlemen to look at.

It certainly is a pleasure to look into the faces of so many purchasing agents and managers of purchases and stores departments, collectively. I was rather amused at Mr. Aishton's remark about the supply men, and his feeling toward them. I couldn't help thinking, myself, that it is a pleasure to see everybody looking at you and smiling, because sometimes when we call on you individually, and slide along the bench in the outside room, waiting to see you, it depends upon the subject to be discussed whether the smile on your face is cordial or not at the time we enter.

Mr. Aishton referred to airplanes. I might say, for your information, that had it been possible for us to get the airplane that a large manufacturing concern desired to exhibit, I think it would have taken up a good part of the space we have down there—in fact, the spread of its wings was too great for us to get it into Marine Hall.

The manufacturers have provided, under our supervision, the greatest track exhibit that has ever been put on in Atlantic City. If you will go down there you will see some of the finest pieces of mechanism that it has ever been your privilege perhaps to gaze upon.

Address of Chairman A. S. McKelligon

Co-operation with Mechanical Division emphasized—Loyal work of committees noted—Adoption of recommendations urged

The honor and privilege of being elected to the office of chairman of this important Division is fully realized and appreciated and in my administration of the affairs of the Division during the past year, I have fully realized my responsibilities.

The individual co-operation received from all the members of the Division is indicative of the manner in which we as a department fulfill our every day duties and the success of our many recommendations during the past years has been due in no small way to the readiness of members in advocating standards for the Division to follow rather than in limiting their recommendations to personal preferences.

We all know the main fundamentals of purchasing and storekeeping prescribed and laid down for us by the pioneers of this Division. Stock books, ordering and receiving of materials, delivery of materials to the shops, supply train, etc., are standard practices. If we are to pro-

gress, however, we must recognize new thought and opinion brought out in committee recommendations with the sole purpose of accelerating and stabilizing the adoption of present standards. This can be accomplished if every member of the Division will interest himself to the extent of learning what practises are advocated by the Division, and whether or not they are the best for individual railroads can be determined in many cases by actual trial.

It is not possible nor would it be practicable to have all members of the Division actively engaged in committee work. But it devolves upon all members to be alert to the importance of the work of the committees and to aid and assist them in arriving at their conclusions by promptly answering questionnaires or by placing facts and suggestions before the committee members.

All of the reports before the members have been the subject of earnest study, by committee members. Reading these reports has brought home to me the enthusiasm, thought, and the research put into them. It should be appreciated that in the completed work, we have the united effort of men engaged in this profession in all parts of the United States and Canada.

In connection with the preparation of the report on recovery, repairs and reclamation of discarded material, the committee has enjoyed a contact with the Mechanical Division. This contact has been most satisfactory and fruitful of results to both Divisions.

Another subject attracting the attention of modern business today is material handling. Reductions in the cost of handling materials to the user as well as within the shops is claiming the attention of industry because of its direct effect on production. Our labor costs are fixed, and so are freight and passenger rates. Therefore, the returns to stockholders can only be made attractive by a reduction of operating costs, through efficient methods and the curtailment of unnecessary expense within the various departments of the railroad, and the Purchases and Stores Department can create large savings by modern equipment and methods in material handling.

Several matters have been referred to the Division during the year on which it was necessary to take prompt action. We have been ably assisted in this respect by the vice-chairman and members of the general committee for which I wish to express my appreciation.

Tribute to Farrell and Nelson

I particularly wish to commend the work and interest of the secretary, Mr. W. J. Farrell who has practically dedicated his life to this, our work.

The arduous task of selecting the committee personnel for the past year was assigned by Mr. O. Nelson, general storekeeper of the Union Pacific, and a member of the general committee. His personal knowledge of the members, assisted by the expressions obtained from member railroads has made possible the splendid personnel of our subject committees as indicated by the excellent reports.

Last year the annual contest was inaugurated by the Division for the younger members. It was very successful in the results obtained, the thanks of the Division is due Messrs. Walsh, Tobey and Scott who read and judged the papers.

The material and supplies balances of December 31, 1926, compared with December 31, 1920, discloses a reduction of $205,577,000. This stock reduction has resulted in a saving to member railroads of over $20,000,000. I believe it is only fair to the Division to say that we have been able to bring about the results before mentioned through the sincerity and activity of its members.

This important work is receiving the attention of our railroad executives in the United States and Canada and is reaching down to all who have to do with material, as disclosed by the consideration that the material and supplies situation is now being given by other railroad associations. On many occasions, in recent years, members of the Division have given interesting and informing addresses before business and railway clubs in connection with purchase and supply methods and their result and effect on the prosperity of the properties represented. Only recently two prominent members of the Division, Mr. Hall and Mr. Pearce addressed the Roadmasters Association and the Bridge and Building Officers and both talks were received with very favorable comment. The significance of this work is apparent when it is considered that these associations are representative of the greatest users of material.

What helps the Division helps the railroad and what helps the railroad helps the Nation. The inception of improved methods in purchasing and handling our materials is greatly enhanced to the extent of the cooperation we receive from the workers in the service. I refer not only to the Purchases and Stores Department but to all other departments and it should be our ultimate aim to encourage their efforts and enable them to become readily acquainted with the fundamentals of our department which will produce good results. Every railroad is asked to bring down its operating cost and to render a high type of service. We, as purchasing and stores officers, can participate actively in this great work only in proportion to the interest we have and advantage we take of our recommendations by their practical application.

Report of General Committee P. & S. Division

Work of division held chief cause of huge reductions in inventories on roads since 1920

At the annual meeting of the American Railway Association held at New York during November, 1927, your chairman and general committee supplemented the report of activities with a statement of the reduction in material and supplies for Class 1 railroads, December 1926, compared with December 1920, which is abstracted below.

"Class 1 railroads show a reduction in material and supplies December 31, 1926, as compared to December 31, 1920, of $205,577,000. This was accomplished in face of an increased demand for materials and supplies during the period in question. The purchases made by railroad purchasing agents during the year 1926, amounted to $1,559,000,000. This indicates the responsibility that rests upon Division VI and indicates the larger results that have been obtained.

It may be said that some of this reduction may be due to price trend, also to abnormal stocks on hand in 1920, or that increase in demand caused larger balances, but we know the major results in this field have been brought about by the earnest work of the purchasing and stores departments on the various railroads who have worked to and followed the recommendations and leadership of Division VI.

The reduction in material and supplies investment of $205,577,000 has made available this amount of capital for needed purposes in other directions such as the purchase of new equipment, enlarging terminals and extended service to patrons.

On top of this we must consider the reduction in the carrying charge as well as investment charge at the conservative figure of 10 per cent. (Some authorities place this as high as 22 per cent.) This amounts to a saving to member railroads of $20,557,700."

At the request of President Aishton, a joint committee has been appointed consisting of representatives of the Engineering, Mechanical and our Division to study the metric system as a standard system of measurement.

The annual contest established last year has been continued and a number of interesting papers have been presented. The results have been gratifying and the best papers selected will be presented by the authors at this meeting.

Co-operation with Associations

Contact with the Division of Simplified Practice U. S. has been continued through representatives of the committee on Standardization and Simplification. Reference to such conferences is included in the report of this committee.

As recommended in the report of the reclamation committee at the last annual meeting, a joint committee to study the subject and determine the practicability of certain reclamation operations before adoption or rejection with the Mechanical Division was appointed. The report is submitted in conjunction with the report of the committee on reclamation.

Invitation to be present at the annual meeting of the Railway Fire Protection Association was received and the chairman of the Committee on Fire Protection attended that meeting representing Division VI.

The question of defining a proper description of iron or steel scrap on tariffs of the carriers was submitted to this Division by the Traffic Division through the Traffic Executive Association, Eastern Territory. The recommendation of the General Committee was that the present description "Scrap or Pieces Having Value for Remelting Purposes Only" be changed to read: "Scrap Iron or Steel Articles, whole or broken up, suitable only for rerolling or remelting purposes."

The invitation to attend the 1927 Annual Meeting of the Freight Claim Division was received and accepted. One of the special representatives of the Freight Claim Division will deliver an address at our Annual Meeting. It is felt that such co-operation will be helpful to assist in reducing the damage to freight. Members should give this attention and assist the freight claim officers in every way possible to reduce freight claims, particularly on company material in which we are directly interested.

Contact with the Railway Accounting Officers Association has been continued through the sub-committee of the Committee on Subject 4 but no matters have been considered during the year.

Nominations

The general committee offers the names of the following members as candidates for the Committee on Nominations for the ensuing year:

O. Nelson, general storekeeper, U. P.
A. L. Sorensen, manager of stores, Erie.
O. L. Browne, assistant purchasing agent, A. C. L.
J. T. Kelly, general storekeeper, C. M. St. P. & P.
J. W. Corbett, purchasing agent, C. N.

Discussion

U. K. Hall (U. P.): This report contains the names of the largest number of members elected to life membership of any previous report. These four names are of men who have been active and prominent in the affairs of the Division.

Who can ever hear the name of J. H. Waterman, without thinking of two things—first, of his loyalty to that old "Book of Books" that has meant so much to him. Year after year he has brought us texts and messages from that Old Book. They have enriched our lives. Second, who can ever hear his name without thinking at once of him as the friend of young men? It has been one of his outstanding characteristics, that all through the years he has always tried to reach down and help the young men and today his friends are scattered through all the states by the hundreds.

During the Railroad Administration it was my great privilege to form many new friendships. Some of them are very near and dear. Of all the friendships that I formed at that time, there are none any nearer or dearer than the friendship I was able to form with Samuel Porcher. Those who known him cannot fail to appreciate that quiet dignified, unassuming, kindly gentleman, loyal in his friendships, faithful in his work, a man with whom it is a pleasure at any time to be associated.

In that period I also had the privilege of forming the friendship of W. G. Phelps. Those of us who came to the convention a few years back think of his bubbling, quiet humor, a man who was always leaving behind sunshine.

It was also my privilege in the past years to serve on numerous committees with Mr. Elliott. He is not known as a "mixer," but there is no man who has ever had more of a grip and a grasp on his friends.

I feel that we are expressing the sentiment of our entire division when we assure these men, our brothers, while they are still here with us, that our lives have been enriched and enlarged by their association and fellowship. (Applause.)

Report on the Store Department Book of Rules

Many changes in present forms and instructions proposed———Want shop order changed to store order

L. T. Hoffman
Chairman

The committee suggests that the book of rules be reissued in loose leaf form in accordance with recommendations by a previous committee.

The committee carefully compared the book of rules forms with Railway Accounting Procedure and finds many of them practically the same.

It is suggested that titles be given forms which do not show titles in the book of rules and changes.

The committee has not recommended forms or instructions for handling fuel oil. Special sets of forms or instructions appear unnecessary. On many railroads this is incorporated in and covered by the same instructions and forms for other fuel.

Proposed Changes

Part 1. Section 1—General: Par. 18. The storekeepers at the different points will report to and receive their instructions from the general storekeeper through the division or district storekeeper.

Part 2. Section 1—Binding: (b) Eliminate.

Section 4—Arrangement of Headings: (h) "Data 1 to 5." Par. 4: "Used last. . . . days" (the number of days desired as a working basis can be filled in to suit the conditions the store is to work under). Quantity on hand first of period, plus receipts during the period, less quantity on hand last of period gives total issues during the period.

Part 3. Section 10—Direct Orders on Dealers: (a) Such orders can be made by storekeepers only when authorized by the general storekeeper except in cases of emergency when the storekeeper may act on his own responsibility.

(b) When so authorized the storekeeper will make the order on the dealer on one of the forms used by the purchasing agent, number in the same series as regular orders, and sign as instructed by the general storekeeper.

Price Book. Section 25—Binding: (c) Eliminate.

Section 28—Authority for Price: (c) Eliminate "Credit Requisition."

Part 4—Transferring Material. It has been brought to the attention of the committee that some roads are using the stock transfer requisitions for company material between stores as a waybill, and the committee recommends the adoption of such a plan. The additional form will be known as 41-E, (Fig. 6), this form to be included when writing stock transfer requisition Form 41, 41-A, B, C, and D.

Local conditions on several railroads may make it necessary

that additional copies of 41-D be made to meet the requirements of the freight department.

Section 1: (c) All requisitions on another store will be made on form P. & S. 41 and copies made at the same writing on forms P. & S. 41-A, 41-B, 41-C, 41-D and 41-E. Forms may be printed fan-fold style and spot carboned on the back.

Fig. 1—Form 41 Proposed for Stock Transfer Requisition

(d) Forms P. & S. 41 (Fig. 1), 41-A (Fig. 2), 41-B (Fig. 3.), 41-C (Fig. 4), and 41-D (Fig. 5), will be sent to the division or general storekeeper. After approving they will send forms P. & S. 41, 41-A, 41-B, 41-C and 41-D to the shipping store to be filled. Form P. & S. 41-E will be retained by the ordering store as a record of the order. If a file copy is desired by the general storekeeper it should be produced on plain paper at the time original requisition is written.

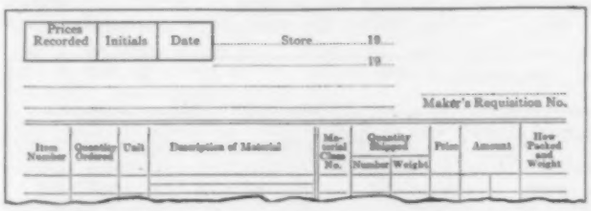


Fig. 2—Top of Form 41-A Proposed as Shipping Notice and Bill for Material Transferred. Bottom same as Fig. 1

(f) An open window envelope so designed that the point from which shipped and the destination are visible shall be used to enclose one or more stock transfer requisitions covering material shipped to the same consignee and destination at the same time.

(g) Shipping storekeeper will fill in column "How packed and weight" the number of boxes, barrels, kegs, pieces, bundles, etc., of which the shipment consists, i.e. how the material covered by requisition is packed and will show the gross weight of entire lot, assign waybill number and date and forward form P. & S. 41-B and C in open window envelope along with shipment to destination.

(h) At destination, form P. & S. 41-B will be assigned the freight bill number.

(i) At destination form P. & S. 41-C will be used as a receiving form, and the record of receipt should be posted on the stock record from this form.

Section 3—Form P. & S. 41-A: (a) Form P. & S. 41-A will be a carbon copy of form P. & S. 41 as made out by the storekeeper ordering the material, as to the headings at the top of the page, Item number, Quantity ordered, Unit, Description of material and Material class number.

(f) Form P. & S. 41-A is to be used as a pricing medium and is to be forwarded to the ordering storekeeper by railroad mail as soon as possible after shipment is made. The ordering storekeeper will show in the bracketed space in the upper left hand corner the initials of the party and date the prices are recorded on the price record.

Section 4—Form P. & S. 41-B: (a) Form P. & S. 41-B will be used by the shipping storekeeper as a freight waybill, form to be placed in an open window envelope and be used as the manifest upon which material travels to destination. At destination Form P. & S. 41-B is used for making a report to the auditor of freight traffic, of company material moved.

Section 5—Form P. & S. 41-C: (a) Form P. & S. 41-C is a duplicate of Form P. & S. 41-B except as to the heading which reads waybill copy and receiving form. This form travels with the shipment along with form P. & S. 41-B and is to be used by receiving store as an original receiving record upon which receipt is acknowledged and from which quantities received are posted on stock sheets.

Section 6—Form P. & S. 41-D: (a) Form P. & S. 41-D will be a carbon copy of form P. & S. 41 as made out by the storekeeper ordering the material, as to the heading at the top of the page, Item number, Quantity ordered, Unit, Description of material and Material class number.

(b) Data 1 to 4. The storekeeper making out the requisition will show in this column the information as shown in the stock book part 2, section 4 (h) which will be copied direct from the stock book by the party making out the requisition.

(c) Remarks. In this column may be shown the cost of the material, where desired and information as to what the material is to be used for, etc.

Section 7—Form P. & S. 41-E: (a) Form P. & S. 41-E will be a carbon copy of Form P. & S. 41 as made out by the storekeeper ordering the material, as to the headings at the top of the page, Item number, Quantity ordered, Unit, Description of material and Material class number.

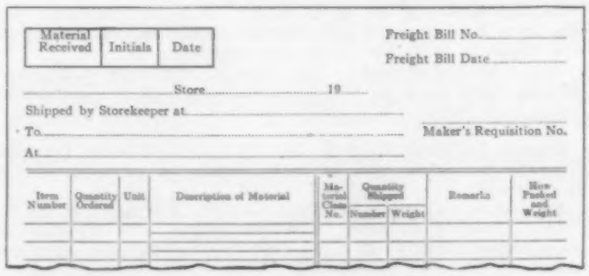


Fig. 3—Top of Form 41-B Proposed as a Waybill for Material Transferred. Bottom same as Fig. 1

(b) Form P. & S. 41-E will be used as the storehouse record of all orders on other stores. A record will be kept on this form of all cancellations and corrections of the requisition, also of requests on other stores to hurry shipments.

Section 7—Form P. & S. 42—Material Shipped Tally Sheet: It is recommended that this be eliminated. Form P. & S. 41-D should serve as a tally sheet.

Part 5—Shop Manufactured Material. Section 1—Use of Shop Orders: (a) Eliminate "and 54" last line.

(e) Change reference last line to form P. & S. 54 to form P. & S. 51. Fig. 7.

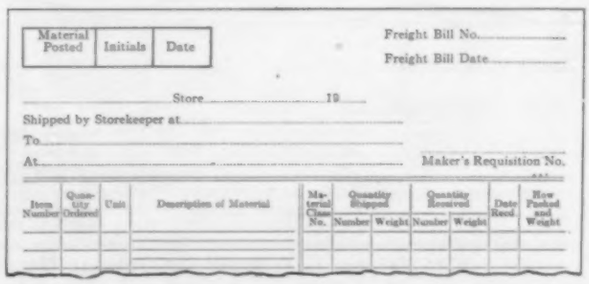


Fig. 4—Top of Form 41-C Proposed as a Waybill Copy and Receiving Form. Bottom same as Fig. 1

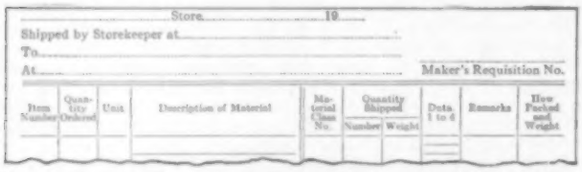
(f) Eliminate.

Section 2—Material Manufactured: (c) Eliminate.

(d) Change to read: (c) All special items of material to be repaired and returned immediately to service shall be repaired

on an order from the storekeeper on form P. & S. 51, when cost is required, except material for immediate use in the shops, as outlined in section 1 (c). Requisition form P. & S. 76 (see part 8) should be furnished storekeeper in each case stating what is wanted.

Section 6—Form P. & S. 51 Shop Order: It is recommended that R. A. O. A. standard form No. 245-38 be used instead of form P. & S. 51.


Store..... 19....
Shipped by Storekeeper at.....
To.....
At..... Maker's Requisition No.

Item Number	Quantity Ordered	Unit	Description of Material	Material Class No.	Quantity Shipped: Number	Quantity Shipped: Weight	Date, 1 to 6	Remarks	How Packed and Weight

Fig. 5—Top of Form 41-D Proposed for Waybill of Transferred Material. Bottom similar to Fig. 1

(j) Eliminated.
(k) Eliminated.
(l) Eliminated.
(m) Eliminated.
(n) Eliminated.
(o) Eliminated.

Section 7—Form P. & S. 51-A: It is recommended that form P. & S. 51-A be eliminated and R. A. O. A. standard form No. 245-45 (sheets 1 and 2) be used instead. Fig. 8 and 9.

(a) Eliminate last part of paragraph. Paragraph will then read: "This form is written up at the same time as form P. & S. 51 and forwarded to the accounting forces for their records.

Section 8—Form P. & S. 51-B: It is recommended that this form be eliminated and as many copies as required of the new form P. & S. No. 51 be used instead.

(a) Changed to read: This form is written up at the same time as form P. & S. 51 and is forwarded to the accounting forces with form P. & S. 51-A for their records.

(b) Eliminated.

Section 9—Form P. & S. 54: It is recommended that this form be eliminated and as many copies as required of the new form P. & S. 51 be used instead.

Section 12—Completed Shop Orders, Form P. & S. 51:

(a) Changed to read: The storekeeper will separate his office record form P. & S. 51, into uncompleted and completed file.

(b) Changed to read: The original form P. & S. 51, showing "date completed," will be returned by the shop foreman to the shop superintendent or master mechanic.

(c) Eliminated.

(d) Changed to (c).

(e) Changed to (d).

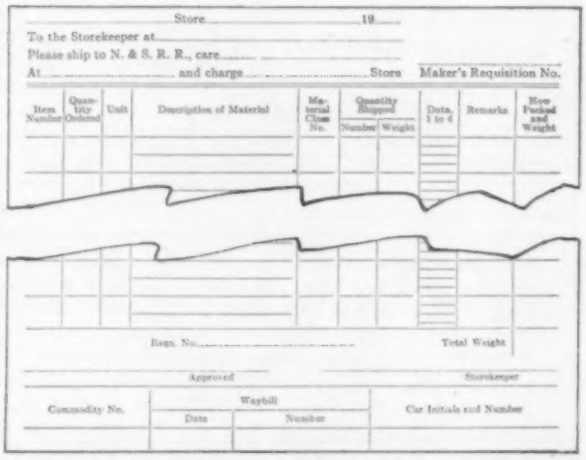
New paragraph added as follows:

(e) Accounting force will see that each store order is accounted for, make all extensions required on orders for stock, and transfer the total from the class charged to the proper manufactured material classification.

Section 13—(Eliminated).

The present order for material to be manufactured or repaired in shops is termed Shop Order. It is recommended that the term Shop Order be changed to Store Order.

Part 6—Reclaimed and Released Material. Section 13—Material Subject to Replacement: (a) When turned over to store department, defective material subject to replacement, should be charged to the regular material classification at new value on credit requisition form P. & S. 62 made by the department interested. When material is offered for replacement and not accepted by the manufacturers, the difference between the scrap value and the new value should be charged back to operating account which originally received credit.


Store..... 19....
To the Storekeeper at.....
Please ship to N. & S. R. R., care.....
At..... and charge..... Store Maker's Requisition No.

Item Number	Quantity Ordered	Unit	Description of Material	Material Class No.	Quantity Shipped: Number	Quantity Shipped: Weight	Date, 1 to 6	Remarks	How Packed and Weight

Reqn. No..... Total Weight
Approved Storekeeper

Commodity No.	Waybill: Date	Waybill: Number	Car Initials and Number

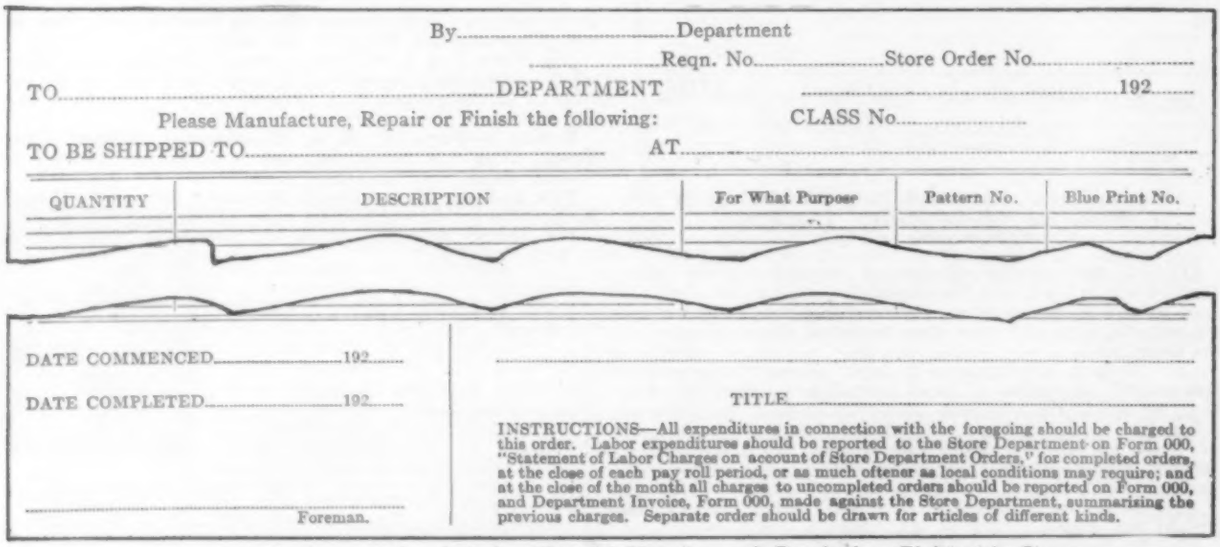
Fig. 6—Form 41-E Proposed for Maker's Copy of Stock Transfer Requisition

(d) When the replacement material is received the invoice shall be charged to the "Regular Material" classification.

Section 14—Pricing and Classifying Usable, Needing Repairs, and Scrap Material: (e) 1. "Needing Repairs," material should be taken into account in "Scrap" classification.

(e) 2. "When repairs are made on a store order, form P. & S. 51 (see part 5, sec. 2 (b) and (c)), all labor and material necessary to repair the article shall be charged on the store order to the primary class. When the repaired article is delivered to the storekeeper, the issuing price shall be the sum of the amount at which the needing repairs article was taken up, and the cost of the repairs, as shown by the store order.

(g) All scrap brass, including borings and turnings, shall


By..... Department
..... Reqn. No..... Store Order No.....
TO..... DEPARTMENT ..... 192.....
Please Manufacture, Repair or Finish the following: CLASS No.....
TO BE SHIPPED TO..... AT.....

QUANTITY	DESCRIPTION	For What Purpose	Pattern No.	Blue Print No.

DATE COMMENCED..... 192.....
DATE COMPLETED..... 192.....
Foreman.
TITLE.....

INSTRUCTIONS—All expenditures in connection with the foregoing should be charged to this order. Labor expenditures should be reported to the Store Department on Form 000, "Statement of Labor Charges on account of Store Department Orders," for completed orders, at the close of each pay roll period, or as much oftener as local conditions may require; and at the close of the month all charges to uncompleted orders should be reported on Form 000, and Department Invoice, Form 000, made against the Store Department, summarizing the previous charges. Separate order should be drawn for articles of different kinds.

Fig. 7—Form 51 Proposed for Ordering Material Manufactured, Repaired or Finished in Shops

be taken into account at fixed prices, or at current market prices, as desired.

Section 15—Change all references to forms 61 to 62.

Section 16—Change all references to forms 61 to 62.

Section 18—Form P. & S. No. 61, Credit for Material Released: Eliminate.

Part 8—Material Issued—Section 3—Approvals. Work Done Under "Special Authority": (b) Change line one from "The original and one copy" to "The original and as many copies as required."

be kept on file by the approving officer and maker, respectively, for their record and ready reference.

(e) 6. Eliminate.

Section 11—Reference to forms 76-85-88, change to 41.

Section 12—Reference to forms 76-85-88, change to 41.

Section 13—Transmitting Requisitions to the Accounting Department: (a) Where the accounting force is separate and at a different location from the store department a letter of transmittal should accompany the requisitions when forwarded to the accounting department force.

CHARGES ACCRUING ON STORE ORDER									COMPLETED			
Month's Account	Labor	Material		Material Store Expenses		Credit for Material Recovered	Total		Date	Cleared From Class	Material Class Charged	Price Per Unit
		Reqn. No.	Amount	%	Amount		Uncompleted	Completed				

Fig. 8—Bottom of Form 51-A Proposed for Orders on Shops

LABOR CHARGES ACCRUING ON STORE DEPARTMENT ORDER

Emp. No.	Amount	Emp. No.	Amount	Emp. No.	Amount	Emp. No.	Amount	Emp. No.	Amount	Emp. No.	Amount	Emp. No.	Amount	Emp. No.	Amount

Fig. 9—Bottom of Form 51-B Proposed for Orders on Shops

The committee recommends that form P. & S. 41 be used in place of forms P. & S. 76, 76-A, 85 and 88.

Section 7—Blanks: (a) The committee recommends that this paragraph be transferred to instructions on form P. & S. 41 and changed to read:

Form P. & S. 41 is to be used when making orders for material for "work done under special authority," "all roadway maintenance and operation," "trainmen's supplies," "station supplies," "repair track material," and all other material except that used in the shops proper, rail and ties, stationery and lumber for planing mills.

(b) and (c) Changed to read: (a) Form P. & S. 77 is a requisition for use in making orders for all material for use in the shops proper and roundhouses, except shop machinery and in making orders for all lumber used in planing and saw mills for manufacturing purposes.

(f) The committee recommends that this paragraph be transferred to instructions on form P. & S. 41 and changed to read: When a requisition on form P. & S. 41 is but partially filled, the unfilled portion is transferred to another copy of form P. & S. 41.

This form may also be used for transferring a portion of the items to another section in the same storehouse or to another storehouse for filling.

(g) Form P. & S. 88 is a shipping notice used to notify the maker of a requisition, form P. & S. 41, of shipments made from time to time. This form may be made up at the same writing as form P. & S. 41. When a requisition form P. & S. 41 is filled complete, all items will be shown on shipping notice form P. & S. 41.

(h) Eliminate.

(i) Eliminate.

Section 8—Transfer of Requisition between Stores: (b) When a storekeeper receives requisition on form P. & S. 41 covering material ordinarily carried in his stock, he will fill same from stock or, if temporarily out, will order on the purchasing agent or other store and fill the requisition when the material is received.

(e) Eliminated.

(g) When a requisition is transferred from one store to another and the approving officer notified, the record of the forwarding storekeeper will be cleared.

Section 9—Numbering Requisitions: (a) A department number shall be given each requisition running in series, to represent the operating division, mechanical division (including division shops), shop (general), engineering department, telegraph department, signal department.

(b) Eliminate.

(c) 5. All requisitions shall be made on form P. & S. 77, except as outlined in section 7 (a) and (b).

(d) 3. The original of the requisition, form P. & S. 41, shall be sent to the storekeeper, the second and third copies to

Section 14—(e) Change form 88 to 41.

Section 16—Scrap Sold to Outside Parties: (c) 2. When shipment has been made, the storekeeper shall make sold bill to cover in triplicate.

Section 17—Sale of Material other than Scrap and Rail: (b) When the material has been shipped or delivered, the party authorized to furnish the same shall make "sold bill."

Section 18—Obsolete Material and Damaged Material at

REPORT OF ICE RECEIVED, ISSUED AND ON HAND

At ..... During Month of 192

RECEIPTS		DISBURSEMENTS	
Balance from last report	Lbs.	Issued per detail below	Lbs.
Received during the month	Lbs.	Shrinkage	Lbs.
Total to account for	Lbs.	Total disbursed	Lbs.
		On hand per inventory	Lbs.
		Total accounted for	Lbs.

ISSUED DURING MONTH PER REQUISITIONS, RECEIPTS, ETC., ATTACHED

TO	Operating Expense Acct. No.	Number of Pounds		Total (Net Tons)	Price (Net Tons)	Amount
		Issued	Shrinkage			
Stations						
Sections						
Passenger Cars						
Locomotives						
Cabooses						
Dining Cars						
Business Cars						
Observation Cars						
Parlor Cars						
Pullman Cars						
Hotels						
D. C. & H. Outfits						
Store Department						
Outside Companies						
Company Employes						
Schedule Line Refrigerators						
Other Refrigerators						
B. & B. Gangs						
Wrecker						
Shops						
Roundhouses						
Repair Tracks						
Signal Maintainers						
Office						
Office						
Office						
Totals						

The total pounds of shrinkage divided by the total pounds issued, equals ..... % of shrinkage.

House No.	Length	Width	Height	Cubic Feet

Note: The total number of cubic feet revealed by actual measurement should be multiplied by 44.44 to determine the total number of pounds.

..... 192 .....

Storekeeper.

Fig. 10—Form 115 Proposed for Handling Ice

Stores: (a) All obsolete and surplus material on which authority has been secured to scrap—also all damaged material at stores—shall be covered by requisition, form P. & S. 41. Notation shall also be made on the face of the requisition of

the total stock value and total scrap value, so that the accounting force may charge the proper operating account with the difference between new and scrap value through the medium of journal entry, or adjustment requisition (see Part 2, section 9).

Section 19—(a) Change form 76 to 41.

Section 20—Para. 2 and 3 and C D E form 76 to 41 and 61 to 62.

Section 21—Forms for Issuing Material:

(A) (C) (F) Change form Nos. 78 to 77 and 85 and 88 to 41.

(g) Form P. & S. 41. This is form for use as a shipping notice in notifying parties relative to shipment of material including sales to outside parties. This form shall be made up in pad form.

(h) Eliminate.

The committee recommends the elimination of form P. & S. 90, 90-A and 90-B from our Book of Rules for the reason that they are accounting department forms.

Part 9—Rail, Fuel, Ties and Stationery: Present forms and all instructions appearing in the Book of Rules relating to handling locomotive fuel designate the general storekeeper as the officer who shall handle locomotive fuel exclusively including the distribution. It is the recommendation of the committee that the title general storekeeper be eliminated from the instructions, forms, etc., appearing in the book of rules, relating to fuel and instead the title, designated official, be used in the instructions.

Section 36—Form P. & S. 115—(Ice)—The committee recommends the elimination of forms P. & S. 115, 116, 116-A, ice forms, and the substitution of a new form P. & S. 115 shown in Fig. 10.

Form P. & S. 91—Statement of Inspection of Ties: The committee suggests the number of spaces be increased and left open for showing the grade when the book of rules is reprinted.

For P. & S. 93—Rail Shipping Notice: The committee suggests the number of spaces for showing lengths of rail be increased, when the book of rules is reprinted.

Form P. & S. 95—Inspection report: The committee suggests markings on rail and length of switch points be left open or brought up to date when the book of rules is reprinted.

Section 55—Forms for Ordering and Issuing Stationery: The book of rules provides for form P. & S. 126 Voucher for payment of stationery invoices. It is recommended that this form be eliminated from the Book of Rules and the regular voucher form used as provided by the accounting department.

The present Book of Rules provides for form P. & S. 125—Bought Bill for stationery. It is recommended that this be eliminated and the simplified invoice form used.

The report is signed by: L. T. Hoffman (chairman) traveling storekeeper, U. P.; E. G. Ellenberger, material supervisor, Penn.; J. C. Jackson, general storekeeper, C. N.

Discussion

D. B. Allen (U. P. Co.): I should like to ask why the proposed form is named a "shop order" rather than a "store order." The order is made by the store department. The fact that it is addressed to the shops and covers material to be manufactured in the shops is no reason why it should be called a shop order. The chairman stated that the shops have a similar form known as a shop order. How is he going to differentiate between them?

Mr. Hoffman: The committee has recommended that it be called a store order, changing the present term from "shop order" to "store order."

D. H. Reed (Southern): In Part 6, the proposed changes under paragraph (a) it is recommended that an item of material subject to replacement will be taken back into the store house account and credited to the operating account in which it was originally charged. If the manufacturers do not accept the replacement, it is to be charged back to the original account. It appears to me that that is unnecessary accounting. In the first place, when we receive the material and charge it out, and it becomes defective, and we can't return it to the manufacturers, or have it replaced, it has to at last go to that operating account. I don't see why we should take that material back in. I would recommend a rewording of that paragraph, which would also change Section 13, Item (d), to read: "When turned over to store department, defective material, except rail, subject to replacement should stand charged to the proper operating account. When material is offered for replacement, and not accepted by the manufacturers, the scrap value should be charged to the regular material classification on credit requisitions form P. & S. 62 to credit of operating account originally receiving charge." That would change the other paragraph to read: "When replacement material is received, any additional invoice value shall be charged to the regular material classification, to the proper operating account."

That would simplify the accounting. The value of any defective material other than rail should remain in the operating account originally charged until the transaction is closed.

Mr. Hoffman: This was considered by the committee, which found that it has been and is the practice on most railroads, in the same month when material is received that is defective and returned back by a department, to credit the account which was originally charged, and charge it to the material-on-hand account. This is done for the principal reason that the Interstate Commerce Commission has clearly defined that credits and debits should be allowed to operating expenses in the months in which transactions occur, material is used, or released.

Mr. Reed: That is true, but, why should the store-house account be burdened with the cost of an item that has alreday been issued and becomes defective? Why should the store-house account be burdened with the cost of an item that is not there, that does not belong in there, but only belongs in scrap?

Mr. Hoffman: Our idea was that material turned back to the stores department, whether of any value or not—new, second-hand, scrap, defective—was a store stock proposition.

O. L. Browne (A. C. L.): The Interstate Commerce Commission requires that all material on hand must be reported in some shape or form, or at some value. If that material is on hand, it must be included in the inventory, and there is only one way to get rid of it. That is to scrap it or use it, and if you scrap it, it becomes obsolete. It must be charged to the expense for which it was intended, or else it must be held on hand in the inventory.

Mr. Reed: It is recognized by practically all who have to do with the handling, that material once charged doesn't belong to the inventory. It is an item in use. Even though it becomes defective, it is still in use in so far as we are concerned, until disposition. If you take an acetylene torch from the manufacturer, charge it out, and something goes wrong with it during the first couple of weeks, you feel the manufacturer should make a replacement or a partial replacement. I don't see why we should accept that tool back in our department and hold it there, and in 30 days charge it back to the original account.

O. N. Nelson (U. P.): I am afraid our friend from the Southern does not look at this the way the using department does. If the using department receives a defective piece of material or machinery, it naturally does not feel warranted in accepting a charge for it, and, for that reason, feels that the stores department should take it back, at full value, and replace it with a perfect piece of tool or machinery. That holds very largely in connection with the A. F. E. orders, work orders. Suppose you take a piece of machinery costing five or six thousand dollars. If the thing is defective, you couldn't order another one and charge up an additional sum of money to that department. For that reason, the stores department feels it must take back this defective material

or machinery at full value and hold it in stock until the management decides one way or the other.

Mr. Reed: If the item costs three or four thousand dollars, you make your original charge. If you take it out at the full face value, the value of a new item, and it is defective, you are taking into your account an amount that is not correct, because it is only worth the scrap value. It is no good to the company after it goes out. That is all you will get out of it, whether it is ever replaced or not.

Mr. Hoffman: What would you do with the balance of that value?

Mr. Reed: It has to stand charged to the operating account.

Mr. Hoffman: It has to at some time or another. You couldn't dispose of it in the inventory account.

Mr. Reed: If it is defective, it certainly is not worth the new value.

Mr. Hoffman: At the time it is issued you don't know that it is defective. When it is found to be defective, you have to take it up in the regular way with the manufacturers for replacement, and at that time it is a disputed item.

J. C. Kirk (C. R. I. & P.): It seems to me that the committee is absolutely right and that we should take this material back at new value. We ought to put ourselves in the same position that a merchant would, if we bought a pair of shoes from him, and took them home, and found they were made of paper soles. We would certainly want our money back, or equal value for what we paid. In this case, we are the sellers. If we sell a brass bushing to the mechanical department and it finds a hole in it, the department wants its money back, and it wants full value. As far as hurting the stock balance is concerned, I can't imagine where you could even find it in most railroad stock balances. I don't think it is worth talking about. If it is in order, I should like to move that the committee's recommendations be accepted as written.

The motion to amend the committee's recommendation in Part 6 Par. (a) was put to a vote and was lost.

The Chairman: In Part 4, in connection with transferring material between stores, the committee recommends the use of stock transfer requisitions as a waybill. That is not generally the practice and it would be fruitful to have some discussion on that.

A. J. Kroha (C. M. St. P. & P.): On the Milwaukee, for the outward points, we use a similar waybill for the smaller stores, but for the larger stores we have to write out the regular waybill.

E. G. Ellenberger (Penna.): Those of you who use a multiple item requisition can carry this idea into effect economically, because of the fact that when you write the requisition, either by typewriter or by hand (preferably by typewriter), you can produce a number of copies which will serve as a waybill. I presume some of you have shop agencies, and some have not. Those of you who do not have shop agencies would necessarily prepare a regular standard bill of lading and produce it for the freight agent to prepare a waybill. Those who have shop agencies would prepare the waybill direct. In producing the extra copies of the transfer requisition at the time the requisition is written, you will be able to produce sufficient copies to provide waybilling facilities without recopying.

There being no further discussion the report was adopted as read and the committee dismissed.

Report on the Classification of Material

Committee finds recommended practice followed on only half railway mileage

E. H. Hughes
Chairman

The committee has considered making the standard material classification flexible to fit the 12 groups developed in conjunction with the Railway Accounting Officers Association and adopted at the 1927 annual meeting of Division VI. The committee is of the opinion that the material stock report co-ordinates with the standard material classification and finds it feasible to prepare a classified stock and balance sheet based on the present standard.

A canvas was made of 68 Class 1 Railroads in the United States and Canada to ascertain the number using the A. R. A. Standard Material Classification. This canvas was similar to the one made in 1925-1926.

A recapitulation indicating the results of this canvas is given below:

	Roads	Total Mileage	Per cent. to Total
Using A. R. A. Classification	43	136,780	52.78
Using their own Classification	18	95,141	36.72
Using A. R. A. Classification in part	2	9,623	3.71
Using A. R. A. Classification for accounting	1	14,898	5.75
Not replying	4	2,658	1.03
Total	68	259,100	100

The committee considered all additions, changes, etc., recommended and suggests the following:

Additions to Classifications

Item	Classification
Bolts—guard rail	1-A
Liners—patented track	1-C
Spacers—tie	1-C
Tampers—pneumatic or electric	1-C
Tools—track and parts, power operated	1-C
Covers—canvas motor car	1-D
Electro pneumatic car retarders	2-A
Insulators—fiber, all kinds	2-A
Retarders—electro pneumatic car	2-A
Bags—lineman's tool	2-B
Belts—lineman's safety	2-B
Covers—manhole, sewer	3
Iron—valv. corrugated	3
Wall Board—all kinds	3
Discer—ballast	9-C
Layers—rail and parts	9-C
Mowers—track and parts	9-C
Bushings—staybolt, iron or steel	11
Plugs—porous for staybolts	11
Staybolts caps, sleeves and nuts	11
Springs—loco. sectional cyl. packing	12
Flue safe ends	13-A
Tube safe ends	13-A
Aluminum—pig	14
Aluminum—sheet	14
Metal—monel sheets and bars	14
Solder—Silver	14
Rings—Cylinder and piston valve packing	19
Bearings—patented journal roller for cars	20
Boxes—journal roller bearing	20
Hose—backup or tail	22
Alarms—low water	23-A
Bells—locomotive	23-A
Bearings—patented journal roller for locos	23-A
Couplings—tank hose patented	23-A
Plugs—patented washout	23-A
Valves—patented throttle and parts	23-A
Pyrometers for locomotives	23-A
Windows—clear vision	23-A

Item	Classification
Hinges—patented locomotive front end ring	23-B
Cement—composition flooring	24
Covers—headrest and seat back	24
Excelsior	24
Tiling, rubber	24
Heaters—electric	25-E
Lights—flash	25-E
Lights—flood	25-E
Pullers—wheel for autos and trucks	26
Coal—smithing	27
Wheels—all kinds mounted	29
Boxes—passenger car step	36-A
Clubs—brake	36-A
Lamps—carbide	36-A
Lamps—switch and signal	36-A
Strapping—metal and tools for coopering	36-A
Shears—hedge	36-A
Tarpaulins—all kinds	36-A
Whistles—police and crossing watchman	36-A
Compound—hot box cooling	37
Cloth or Rags—wiping	37
Coal—anthracite	40
Traps—steam for buildings	42
Brushes—steel wire	45-A
Menders—hose	45-A
Snaps—harness	45-A
Guns—pressure grease	45-B
Wrenches—screw	45-B
Wrenches—fire hose	45-B
Cement—loco., front end	47
Sprayers—paint	47
Respirators and filters for same	47
Cement—plastic car	47
Compound—case hardening	47
Paper—stencil	47
Water—distilled	47
Weed killer	47
Wool—steel	47

The following transfers from one class to another are recommended:

Item	From Class	To Class
Couplings, water hose	46	45-A
Hose, air—unmounted or blank	—	——
Hose, signal—unmounted or blank	22	46
Hose, steam heat—unmounted or blank	24	46
Nozzles—brass hose	42	45-A
Solder—silver	45-A	14

Changes in Unit

	Present Description and Unit		Proposed Description and Unit	
Class 3—Lining, flue	bbl.	Ft.	Size	Ft.
Metal expanded	bbl.	Pd.	Size and Kind	Ft.
Nipples, CI pipe	bbl.	Ea.	Size	Ea.
Paper, tar	bbl.	Sq.	Kind	Sq.
Paper, roofing	bbl.	Sq.	Kind	Sq.
Class 36-A—Soap, toilet	cases or gross		Cs. gro. or gal.	

The report is signed by E. H. Hughes (chairman), general storekeeper, K. C. S.; J. C. McCaughan, general storekeeper, H. V.; A. R. Mullens, division storekeeper, U. P.; W. R. Knauer, supervisor of stores catalog, Penna.; C. H. Thompson, district storekeeper, S. P.; J. C. Kirk, asst. general storekeeper, C. R. I. & P.; O. T. Burleigh, traveling storekeeper, B. R. & P.; F. J. McMahon, general storekeeper, N. Y. C.; R. G. Benson, store inspector, Erie; O. Nelson (chairman ex-officio), general storekeeper, U. P.

Discussion

It was moved and seconded that the paper be received.

E. W. Peterson (Ban. & Aroo.): The first item of Class 36-A is "passenger car steel boxes." I should like to ask if the committee considered Class 24, passenger car material.

Mr. Hughes: The committee didn't consider that, feeling it was more in the nature of a train supply, and that Class 36 was the proper one for it. There were suggestions made to put it in Class 30, manufactured lumber, and of course, there are a good many steel boxes, more perhaps than boxes of other compositions. It was felt that would be included best in 36-A, along with the other supplies.

The Chairman: This is a very constructive report. Some of the criticisms that were leveled against the previous classifications have been ironed out. For instance, the committee has corrected the trouble of having material in two or three different places.

There being no further discussion the motion to accept the report as read was put to a vote and carried and the committee was dismissed.

Storekeeping On Terminal Properties

Economies in Store for Roads that Improve Contacts with Trunk Lines and Follow Work of Division VI

By E. H. Polk

District Storekeeper, Southern Pacific, Sacramento, California

E. H. Polk

There are several different systems of operating the large terminal railroads. Under one system the property comes under the direct management and control of one of the owning trunk lines. Other railroads operate over the terminal line tracks and property as tenants on a direct rental or cost-plus basis. The material handling problems are many with this arrangement. The parent line has direct control of purchases and stores. All classes of material common to all using lines are provided by the operating company from its general stock. Other material, standard only to the individual lines, is usually ordered from those lines and in some cases carried separately on a handling cost basis.In other cases this material is taken into the operating lines store stock and later issued at cost plus handling.

The former method reduces the operating company's stock investment but generally increases the cost of handling. The latter method is apt to be responsible for the issue of one company's material to another company with consequent errors in charges. This system of operation should have the advantage of supervision from trunk line purchases and stores officers, and the close connection with other stores of that system should be beneficial, first, in furnishing a supply to meet the requirements, second, a direct outlet for surplus and other material accumulated and third, an outlet for the scrap at higher prices by including it with the trunk line sales. The success of handling the material, depends largely upon the supervision given by the parent line officers and the close working connections maintained with other stores of that system.

Improve Conditions at Terminals

On many trunk lines, particularly those which operate supply trains, the standards of housekeeping and the conditions of facilities are often not as good in the terminal yards as on the balance of the district. This is said to result from the fact that the supply train does not always serve the terminal yards with the same responsibility for inspection that prevails around the stations, section tool houses and other places on the line. The importance of more frequent visits, closer inspection of terminal railway storekeeper's records is emphasized.

Another plan of terminal operation is a separate and independently operated system under the direct management of a terminal organization which usually includes a purchasing agent in direct charge of all materials and supplies and, reporting to him, a storekeeper responsible for the storage, handling, care and disbursement of material. The purchasing agent makes all purchases direct, with the privilege of buying from the terminal owners. Under this method, the quantities are smaller and prices higher than paid by larger railroads for the same class and kind of material. The plans or methods of stores organization and operation have been developed by the officers

in charge or brought from a previous trunk line connection.

At one of the larger terminal stores, where the storekeeper has installed practices recommended by Division VI, the store is in as good a condition and as well operated as many of trunk line stores. The differences usually found in methods, however, are many. Storekeepers under this system do not have the advantages of direct contact with purchases and stores officers of larger railways. They also lack a direct avenue for disposing of surplus material. Reclamation practices which are profitable on larger lines, are often impracticable, because of the smaller accumulation. All these losses from the increased cost of operation, increased cost of material, increased investment of stock and inventory shortages must be paid by the participating lines.

The uniformity of practices and the great advantages that have come to the purchases and stores departments on trunk line railroads, have been brought about through the broad exchange of ideas handed down to the membership of Division VI and its predecessor organization by experienced officers serving on committees to study and present the best methods and practices of carrying out their problems. The particular problems of terminal line stores have not received this consideration.

The terminal line stores will be rendered greater assistance if Division VI—A. R. A. will make the problems the subject of investigations that will bring these storekeepers more closely together and give them the same advantages which have been enjoyed by the storekeepers on the trunk lines since the formation of their organization.

Discussion

Mr. Dodge (Kansas City Terminal): Mr. Polk has given this paper much consideration and from it I believe he has gotten an insight of terminal storekeeping. I have attended these conventions for a number of years, but I have always thought there was something lacking in this convention that was needed by the terminal storekeepers.

Mr. Polk visited me sometime ago and I gave him an insight of our problems as I saw them. Our terminal is conducted under his plan two, or the second plan he spoke of. I agree with Mr. Polk. I think a committee should be appointed next year to help out and give recommendations for the terminal storekeepers. I think there can be many improvements made. I thank you.

The report of the committee on uniform accounting of material will appear in the DAILY *tomorrow.*

Report of the Committee on Forest Products

John Foley
Chairman

Each year since 1923 the proceedings of the Purchases and Stores Division, A. R. A., have contained references to the simplification of lumber sizes and terms which has developed under the cooperative effort of manufacturers, distributors, and consumers into what are known as American Lumber Standards. In 1925 the Division adopted American Lumber Standards as they stood at that time, and in 1927 adopted the revision of sizes which had been made. In 1926 the Engineering Division adopted American Lumber Standards and also provided coded specifications for structural grades.

American Lumber Standards classify the product of the sawmill and planing mill as (a) yard lumber, (b) structural timbers and (c) factory or shop lumber. Since car lumber has not yet been given a class distinction, some of those in railroad organizations who should be acquainted with the subject seem to have overlooked the adoption by the American Railway Association of American Lumber Standards for lumber not used in cars. Complete appreciation of that fact and action taken accordingly would improve the lumber situation.

For the past three years the Mechanical Division has been working on sizes and grades for car lumber. Its committee on car construction has striven to use standard yard sizes as far as possible. It is recommending this year the adoption of sizes which seem narrower in some widths than was formerly the case, but which differ because the Mechanical Division, in 1926, adopted moisture contents lower than those understood to apply to commercially dry lumber. The committee on car construction is recommending that during the ensuing year comparative prices be obtained on both sizes of car lumber, at the A. R. A. standard moisture contents, to see what might be saved by the use of the proposed patterns.

American Lumber Standards provide only basic grade descriptions for the classes of material included. In adopting these, the A. R. A. did not commit the railroads to any detailed grading rules published by regional associations of lumber manufacturers. Railroads which find grading rules which have apparently been revised in accordance with American Lumber Standards, resulting in higher costs, are not bound to such new rules. However, each railroad should not aim to have lumber grading rules of its own. Until the Committee on Specifications and Tests of Division V presents a report which is adopted, railroads should use for car lumber the grading rules adopted by the Master Car Builders Association and the Railway Storekeepers Association in 1910. For general building purposes the grading rules for yard lumber published by the regional lumber associations and in accordance with American Lumber Standards provide material from which railroads should be able to select lumber suitable for any given purpose. For structural timbers the code approved by Division IV enables the Construction and Engineering Departments to tell the purchasing and stores departments what is required.

The fact that railroad buyers of forest products find some sellers of wood unfamiliar or unsympathetic with American Lumber Standards is no reason why the actions of Divisions IV, V and VI should not be made effective by purchasing American Lumber Standard grades and sizes as far as possible. The benefits of standardization will not be obtained until standard lumber is insisted upon wherever it can be used.

At the seventh general conference of lumber producers, distributors, and consumers, held by the Department of Commerce, in Washington, May 3, 1928, the following revisions or additions to the standards adopted by the American Railway Association in 1925 and 1927 were adopted:

Section 21. The term "edge grain" substituted for the term "vertical grain."

Section 27. Amend the footnote to read: In tongued and grooved flooring and in tongued and grooved and shiplapped ceiling 5/16 in., 7/16 in., and 9/16 in. thick, board measure, the tongue or lap shall be 3/16 in. wide, with the over-all widths 3/16 in. wider than the face widths shown above.

The committee again stresses its belief that the weights of lumber published by the several lumber associations and used generally by the seller to determine the amount of freight to add to mill costs, for the purpose of quoting delivered prices, are higher than the actual consignments. One company has saved 90 cents per thousand board feet on approximately nine million board feet of lumber through buying f.o.b. mill.

A record of each shipment of lumber which gives the quantity, kind, grade, price, and weight from the freight bill will not only inform the buyer as to the savings made from underweights, but will provide information on the proper drying of lumber, care exercised in loading during wet weather, and a comparison of densities.

Lumber less than eight feet long is used for many railroad purposes. Much of it is purchased in longer lengths and recut. In most cases this hand sawing is a waste of labor and material. The purchase of specified lengths and long lengths only increases the cost of lumber. The savings possible from the purchase of lumber in lengths less than eight feet long, warrant the use of short lengths wherever possible.

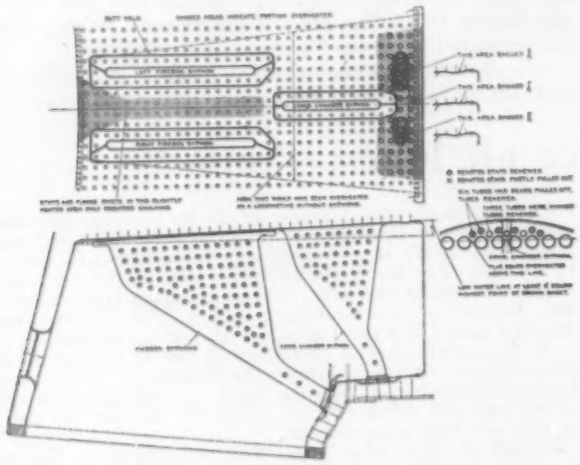
Hardwoods have for years been purchased with a tongue on one end and a groove on the other to provide flooring which could be used in random lengths without the waste entailed by cutting joints to coincide with nailing centers. Now softwoods may be obtained in end-matched patterns for flooring, ceiling, partition, and eventually drop siding, sheathing, shiplap, and roofing. The purchase of end-matched material will contribute toward reducing hand labor by the substitution of cheaper and more accurate machining in preparing the lumber.

The report is signed by: John Foley (chairman), asst. purchasing agent, Penn.; T. H. Clarke, tie and timber agent, Sou.; D. R. Elmore, asst. to general manager, Fruit Growers' Express; J. G. McGrenera, general tie and timber inspector, A. T. & S. F.; Paul McKay, asst. purchasing agent, N. P.; W. C. Weldon, purchasing agent, C. & S.; J. E. McNelley, chief tie and lumber supervisor, A. C. L.; J. M. Doolittle, tie and timber agent, M. P.; G. P. MacLaren, general tie and timber agent, C. N.; H. R. Duncan, supt. of timber preservation, C. B. & Q.; W. M. Portlock, purchasing agent, S. A. L.; M. E. Towner (chairman ex-officio), general purchasing agent, W. M.

New Devices

Thermic Syphons Protect Crown Sheets from Low Water

THE illustration shows the condition of the crown sheet of a Mikado locomotive equipped with Thermic syphons, manufactured and exhibited by the Locomotive Firebox Company, 310 South Michigan avenue, Chicago, after recently passing a severe low water test. Two syphons are located in the firebox and



The Condition of the Crown Sheet after the Water Had Reached a Level 6 In. Below the Highest Point of the Sheet

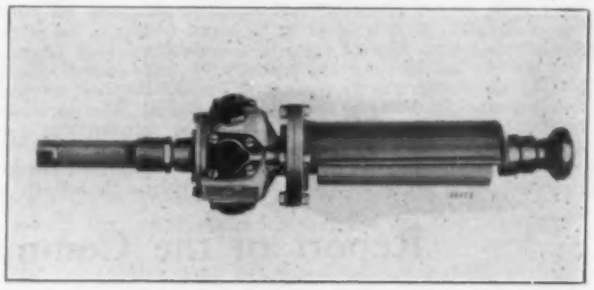
one in the combustion chamber. The water had been inadvertently permitted to drop about 6 in. below the highest point of the crown sheet. There was no boiler explosion and the damage to the crown sheet was repaired at a cost of about $230. Six staybolts were partly pulled out; six tubes, the beads of which were pulled off, were renewed; three kinked tubes were renewed; the crown sheet was repaired where it had bagged from ¼ in. to ¾ in., and staybolts and flange rivets were recaulked where required.

Small Portable Rod Grinder

A PORTABLE pneumatic grinder of compact construction is being exhibited by the Ingersoll-Rand Company, 11 Broadway, New York. It is provided with an outboard bearing and hand grip, and has been developed primarily for polish grinding locomotive side and main rods, and valve motion rods. Its compact and light construction and the 6-in. face of the grinding wheel, however, make it an ideal machine for grinding any wide surface which is to have a smooth finish. Some of its applications in the railroad shop include grinding welds on side rods, grinding brasses to fit main rods, grinding the jaws in main rods to smooth them up for new brasses, grinding relief on brasses after they have been fitted to the rods, grinding frame jaws for reseating wedges and grinding holes in the frame for refitting brake pins.

The motor has three cylinders spaced about the center line of the spindle, all delivering power to one crank pin. This arrangement, together with a counterweighted crank, almost entirely eliminates vibration and insures a steady torque at the spindle.

Each of the three cast-iron cylinders is a part separate from the aluminum case. They are all interchange-



Compact, Portable, Pneumatic Surface Grinder

able and readily removed. Any cylinder, after long service, may easily be replaced.

The valve, crank and spindle are in one piece, so that there is no intermediate valve or spindle-driving mechanism to wear. The valve cannot get out of time. This crank spindle is supported by three sets of ball bearings.

Grinding wheels for these machines are 6 in. long by 2½ in. in diameter and have a 9/16-in. arbor hole. They are made in two different grits and grades. The weight of the tool with the grinding wheel is 16¼ lb., the average free speed, 6,000 r. p. m., and the length over all, 23¼ in.

Thor Rotary Grinders and Sanders

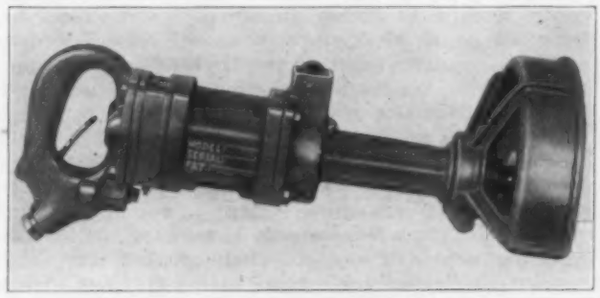
THE Independent Pneumatic Tool Company, 600 West Jackson boulevard, Chicago, has placed on the market a line of rotary pneumatic grinders and sanders, which are designed on new principles. The outstanding features include the accurately balanced and practically vibrationless motor, the governor, the lubricator and the muffler.

The motor, carrying four balanced Bakelite blades designed to be unaffected by oil, water or heat, is very light. It is mounted on a rigid shaft, suspended in oversize ball bearings. The spindle is also suspended and held in alignment by extra large ball bearings at each end, making an accurately-balanced, almost frictionless motor. The adjustable governor, fully enclosed, keeps the free speed and air consumption low, until the wheel is applied to the work. Then it automatically throttles the tool to the speed and air required for the job. The automatic oiler carries sufficient light oil to lubricate all moving parts for eight hours, thus preventing the wear usually experienced in dry rotary machines. The baffle-plate muffler, incorporated in the box-like lug on the spindle support, makes the motor comfortable to handle.

The Thor No. 271 grinder weighs only 15½ lb., and is 21¼ in. long overall. It has a straight handle throttle.

The speed is 4,000 r. p. m.; air consumption at no load and 90 lb. pressure, 20 cu. ft. per min. It carries a 6-in. abrasive wheel with 1½-in. face.

The Thor 271 R sander has a right-angle housing. The length overall is 14 in.; speed, 4,000 r. p. m.; air

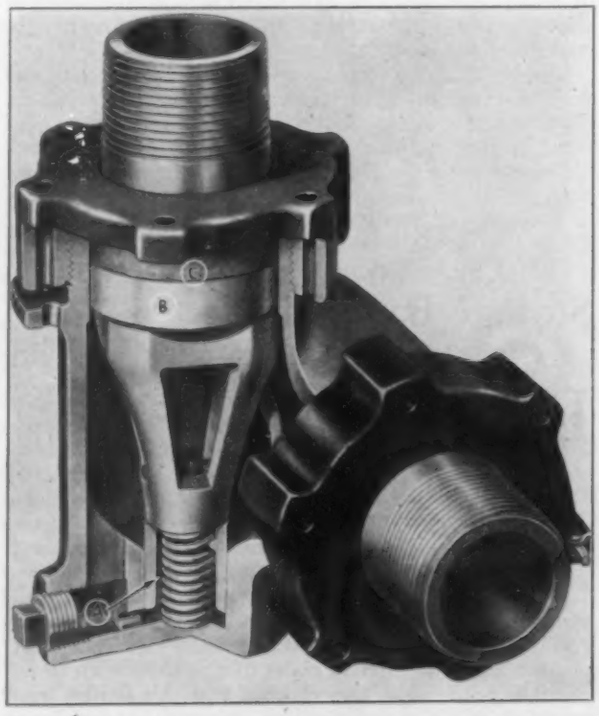


Thor Pneumatic Grinder

consumption, the same as No. 271. This grinder is also furnished in a slightly larger size, No. 271 R (speed, 3,200 r. p. m.), and with a right-angle housing. The latter tool has an overall length of 14 in.; speed, 4,000 r. p. m.; no load air consumption, 20 cu. ft. per min., and carries any size flexible disc up to and including 9 in.

Changes in the Franklin Sleeve Joint

INCLUDED in the exhibit of the Franklin Railway Supply Company, 17 East Forty-second street, New York, is a redesigned sleeve joint for engine and tender connections. The two principal refinements are a reduction in the overhang and a 100 per cent increase in the length of the sleeve bearing, as compared with its diameter, but without lengthening the joint.



The Franklin Sleeve Joint for Engine and Tender Connections

By extending the sleeve and giving it a bearing, there is no longer any tendency for the sleeve to "cock" and produce wear at either points *A* or *B* indicated in the illustration. There is always a full uniform bearing against the gasket *C*. The sleeve is held to its axis by the wide-spaced bearings which tend to reduce the wear. The bearing surfaces are adequate to carry the load, but are purposely narrowed to prevent clogging by foreign matter.

The opening in the sleeve is in the middle so that the flow, instead of being through the sleeve and out through an elbow into the other joint, is from the center of one sleeve directly to the center of the sleeve in the adjoining joint. This close coupling of the joints permits a considerable reduction in overhang. This in turn overcomes the tendency of threaded connections to unscrew, results in a better balanced hanging and reduces gasket wear. Retaining the same clearance limits, longer connecting pipes are possible, which automatically reduces wear on the joints and gaskets.

Piston Valve Bushings with Diagonal Bridges

THE Hunt-Spiller Manufacturing Corporation, 383 Dorchester avenue, Boston, Mass., is exhibiting gun-iron piston-valve bushings cast with diagonal bridges. The bridges between the steam ports of either

Piston-Valve Bushings of Hunt-Spiller Iron with Diagonal Bridges

single-port or double-port bushings are made diagonally with suitable radii in the corners of the ports, and with the edges of the steam ports beveled.

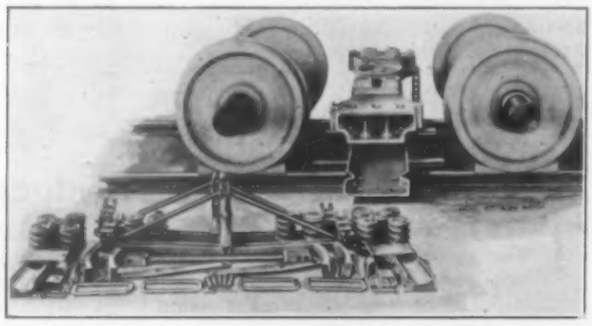
Two methods of machining these ports are in practice. On bushings ¾ in. thick or over the ports are turned on the boring machine with a pair of ⅛-in. tools suitably spaced to give the proper port width, the tools cutting into the bushing not over ⅛ in. The remainder of the metal on the beveled edges of the ports is chipped

and filed away by hand. This operation eliminates the usual milling of the ports.

On bushings less than ¾ in. thick, the edges of the ports are beveled and then milled in the usual way. The time of the operation is considerably reduced, however, because of the narrower width of the cut due to the beveled edge of the port.

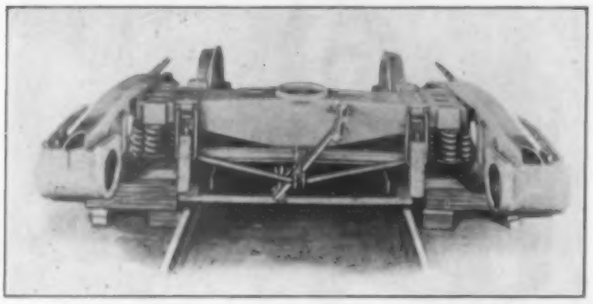
The Buckeye Quick Wheel-Change Trucks

THE Buckeye Steel Castings Company, Columbus, Ohio, is exhibiting a new type of freight car truck, known as the Q. W. C. (quick wheel change) truck which has been developed to reduce the time and the labor required to change wheels on integral box trucks.



Ordinary Truck Disassembled To Remove a Pair of Wheels Note the Number of Parts that It Is Necessary To Handle

The time required to change wheels has been considerably reduced over the regular integral-box types and is equal to and in some cases less than for the Andrews and pedestal types. This important feature has been obtained without its decreasing the effective strength of



End View of Dalman Q. W. C. Truck with One Pair of Wheels Removed—The Frames Have Not Been Entirely Removed and Only One Pair of Brasses and Wedges Have Been Taken Out

the truck parts or increasing the weight of the truck as a whole.

To change wheels on an ordinary integral-box type truck, it is necessary to disconnect the truck brake rigging and remove the brake parts, raise the bolster, remove the springs, remove the spring plank, lower the bolster, remove the brasses and wedges, and then the frames. When changing wheels on a truck of this type there are apt to be some parts lost or broken in removal, such as spring bolts, brake pins, cotters, bolts, etc., which must be replaced with new parts. Excluding the frames and handling the bolster, this means two handlings of 69 pieces, weighing in all about 1370 lb.

With the Q. W. C. truck the procedure for changing wheels is as follows: Jack-up spring plank, thus raising springs, bolster and frames, until the brasses and wedges can be removed from the journal box; insert a block between the spring plank and rail; remove brasses, wedges and jack, thus allowing the frames to hang on the bolster; then slide the frames from the bolster. Excluding the handling of the side frame, this requires two handlings of eight pieces weighing about 254 lb. as against 69 pieces weighing 1370 lb. in the ordinary integral-box type of truck.

The direct savings can be figured on a money basis as the Q. W. C. truck requires only 15 minutes for two men to change a pair of wheels. There are, however, other advantages claimed for the use of the Q. W. C. truck which are more important, if anything, but which cannot be readily computed strictly on a money basis. These are:

(1) Car delay is reduced to a minimum. When a repair gang comes to a car, having ordinary integral-box trucks and requiring the wheels to be changed, 20 to 30 minutes before quitting time or time for the track to be cleared, it means that the car will have to remain until the next day or the next pull. In the case of preference freight, it would mean over-time work and costly delay to the switch engine.

(2) More cars can be handled per day per man.

(3) Supervision is reduced to a minimum. As no pins, rivets, cotters, or bolts are removed, broken or lost during a wheel change, there is no need for handling of new parts through stores, replacing, or rechecking the application of the numerous old parts.

The Q. W. C. cast steel spring plank with the brakes assembled makes one complete unit. The spring plank has the brake hanger brackets, bottom connector safety support, and brackets for the "four-point" or other types of brake beam supports cast integral. In assembling or changing wheels the spring plank and these parts may be considered as one unit.

The Q. W. C. feature can be made in any capacity and with any type of brake hanger bracket construction for supporting the brake beam hanger and for any type of three or four-point or other safety support. The truck illustrated is of the Dalman Q. W. C. type and thus includes the additional spring capacity which is recognized as necessary on modern equipment.

Storage Batteries for Railway Service

BATTERIES designed for car lighting, for signal service and for motor-coach service, are included in the exhibit of the Electric Storage Battery Company, Philadelphia, Pa.

The Exide-Ironclad battery recently has been introduced in the car-lighting field. Owing to the construction of this battery, it is not only compact, but it need never be opened for cleaning through its life.

Another type of battery that has recently been made available in a form for railroad use, is the Exide chloride-accumulator battery for signal service. The Manchester positive and box negative plates of this battery are sealed in glass jars. It is also claimed that this battery need never be taken apart for the purpose of cleaning it throughout its life.

Electric Switch Socket for Train Marker Lamps

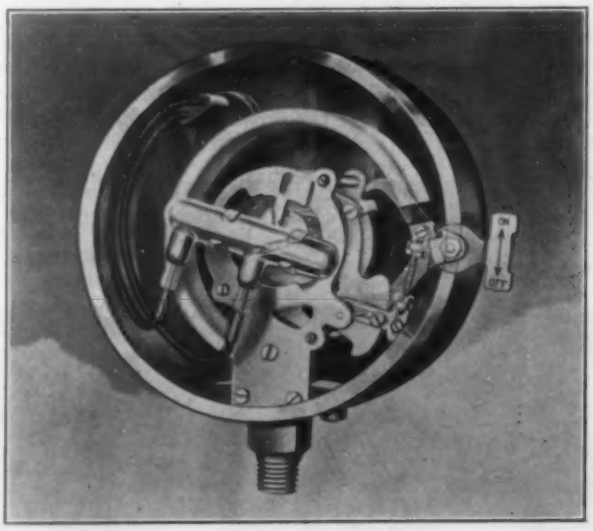
A DEVICE, designed to eliminate the hazard of the loose cable hanging down in a loop from electric marker lamps is included among the exhibits of the Dressel Railway Lamp & Signal Company, Arlington, N. J. It is an electric switch built into an ordinary marker lamp socket. The socket is self-contained. All electrical parts are enclosed in a metal box on the back of the socket, with the two terminal screws for connecting the socket with the car circuit mounted on the back.

The switch socket is so designed that when the marker lamp is inserted, it automatically trips the switch and makes connection to the lamp. A water shed on the lamp bracket protects the switch while connected. When the lamp is removed from the socket, the entire box is disconnected from the car circuit and the box automatically closes up.

The electric switch socket is designed so that any standard lamp bracket may be inserted without the interference of the switch and, as the socket is entirely dead when the electric lamp is removed, there is no danger of a short circuit or shocks when using it as an ordinary socket for oil lamps.

An Automatic Electrical Switching Instrument

THE instrument shown in the illustration, which is exhibited by the Sargent Company, 625 West Jackson boulevard, Chicago, is an automatic electrical switching instrument incorporating a mercury-to-mercury contacting tube, hermetically sealing triple distilled mercury within borosilicate (Pyrex) glass, and is



An Instrument for Automatically Starting and Stopping Motors

used in such applications as an electric water level control for water tanks.

The mercury tube is actuated by an instant impulse action which prevents any arcing when breaking a load of 20 amperes at 110 volts. The impulse action bar is mounted on ball and roller bearing points and enclosed within a dust-free, self-lubricating housing within the instrument casing. In the particular application shown, the Merkustat, as it is designated, is operated as a pressure switch with a Bourdon tube for starting and stopping an electric motor on any pressure device, such as a compressor, at any pressure for which it is set. The instrument is also provided with a hand reset and hand on-and-off switch.

It will be noted that the entire instrument is mounted on the bottom piece of the Bourdon tube, thus preventing any strains from the casing when mounting it on a machine.

The instrument is not limited to pressure applications, as it is also made up with seamless metallic bellows, volitile-charged, for thermostatic work.

Sunbeam Rust-Proof Locomotive Headlight

THE Sunbeam Electric Manufacturing Company, Evansville, Ind., is exhibiting a new headlight, designed particularly for use on switching locomotives as a back-up headlight and on general industrial locomotives where a 12-in. reflector will furnish adequate illumination.

This headlight is made from 16-gage rust-proof steel and is fitted with a 12-in. mirror-glass reflector. The

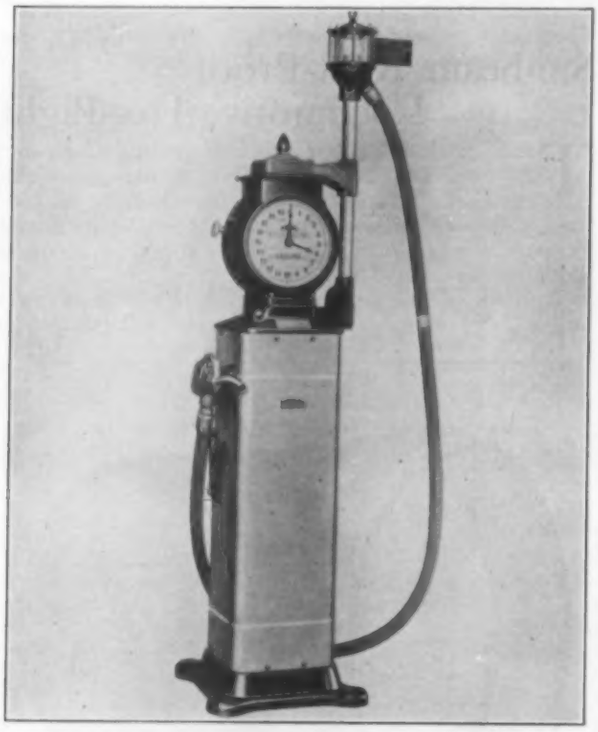
Sunbeam Type 4412 Headlight for Use on Switching Locomotives

trimmings are of cast metal and all joints are packed to prevent the entrance of dust and moisture into the headlight. The legs are of wrought iron A. R. A. standard bolting specifications. Universal focusing of the lamp is provided by a screw-adjustment focusing device accessible through the hand hole door in the side of the case. This headlight will operate with standard 100-watt, 32-volt or 250-watt, 32-volt locomotive headlight lamps.

THE NEW YORK RAILROAD CLUB has arranged an excursion up the Hudson River on a specially chartered steamer, to Indian Point, on July 12, for its annual outing.

Meter for Measuring Flow of Gasoline

A SOLID continuous stream of gasoline delivered at at the rate of 18 to 20 gal. per minute is one of the features of the Xacto Sentry gasoline meter and pump being exhibited at the convention by the



The Bowser Xacto Sentry Gasoline Meter

S. F. Bowser Company, Fort Wayne, Ind.

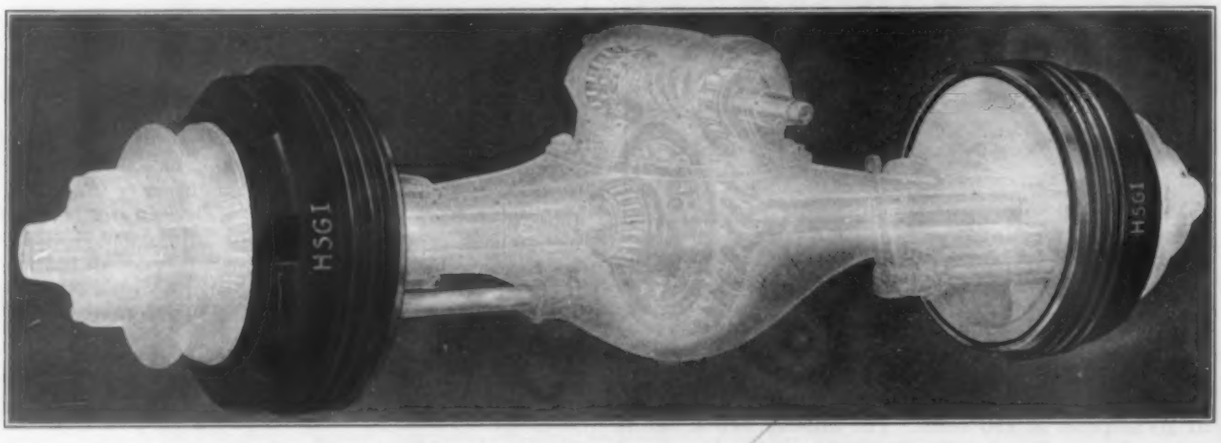
The unit embodies not only the capacity necessary for rapidly delivering large quantities of gasoline, but accurately records the amount dispensed. The recording instrument is the Xacto meter, which measures by volumetric displacement the liquid that is passed through it and is not affected by pressure or rate of flow.

Double dials, one on each side, ten inches in diameter, are visible for 50 ft. in daytime and are illuminated at night. The red hand on the dial has to travel 30 in. to record delivery of one gallon. A bell rings each time it completes a revolution. The black totalizer hand on the dial trips after each gallon is delivered and shows the total up to 20 gal. and then repeats. Both hands may be returned to zero by a turn of the knob on the head. A totalizer is set in the dial which shows the total gallonage delivered up to 100,000 and then repeats. The readings from the totalizer are available only to the holder of the key to the shield which ordinarily covers it.

The meter is operated either by air pressure or by a motor-driven pump away from the unit itself. In one air-operated model, the pressure is applied directly to the storage tank; in the other it is applied to a smaller tank inside of the larger supply tank. The smaller tank fills by gravity between fuelings. The motor-driven unit is operated by a remote-control switch located on the pedestal. The motor pump builds up a pressure against the meter that remains constant until the nozzle is opened.

Cooling Ribs Cast on Outside Face of Brake Drum

THE Hnnt-Spiller Manufacturing Corporation, 383 Dorchester avenue, Boston, Mass., is exhibiting motor coach and truck brake drums on the outside face of which cooling ribs have been cast. The brake drums which have been manufactured by the company for over a period of two years are made from Hunt-Spiller air furnace gun iron. Formerly the ribs were machined on the outside face of the drum from a heavy section casting. This operation has been eliminated by the adoption of the cast ribs.

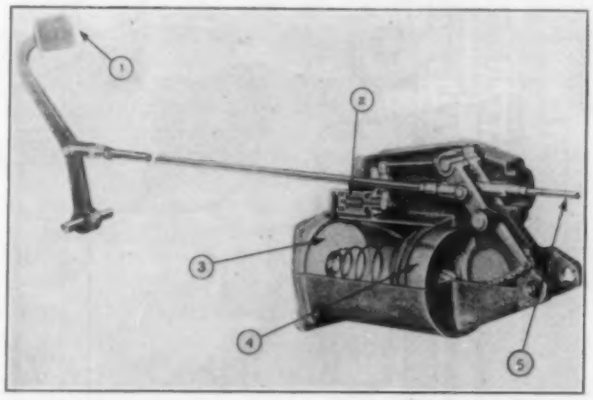


Typical Axle Assembly Showing the Cast Ribs on the Brake Drums

A Vacuum Type Automotive Brake

THE Westinghouse Air Brake Company, Wilmerding, Pa., is exhibiting, for the first time at this convention, its automotive brake-vacuum type. It does not displace the pressure type now used extensively on heavy busses, trucks and trailers, but is intended to fill a need for easier and more effective control on lighter busses and trucks than is possible with the ordinary foot brake. It is also being used on passenger cars.

This brake is a simple compact, self-contained unit



The Westinghouse Vacuum Type Brake Is Designed To Reduce the Physical Effort of Braking the Lighter Coaches and Trucks

interposed in the brake rod between the pedal and the equalizer. It uses vacuum created by the car's own engine to amplify muscular effort, and is controlled in the usual manner by the standard service brake pedal, but with much less effort. When the brake pedal (1) is depressed the application value (2) in the brake amplifier opens, creating a vacuum in the cylinder (3). This causes the piston (4) to move to the left and exert a pull on the brake rod (5) several times that developed in the pedal rod.

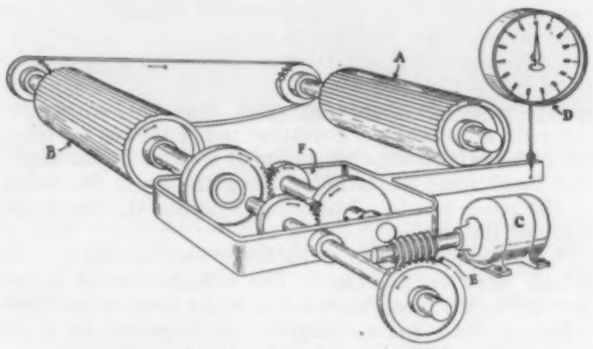
This brake gives adequate control under all conditions, reduces driver fatigue, and extends the period between brake adjustments and lining renewals. The customary practice of "brake riding" is largely eliminated because of the greater sense of security inspired by a more responsive and effective brake.

In addition to the detached units and sectioned models, there is a demonstration chassis by means of which it can be effectively shown that this vacuum brake greatly reduces the physical effort of braking.

Cowdrey Dynamic Brake Tester

THE Cowdrey Brake Tester Organization, Fitchburg, Mass., is exhibiting a dynamic brake tester which is an electric motor-driven transmission dynamometer for measuring the braking effort of each braked wheel of a motor vehicle. The gage reading is given in terms of pounds of road pull. The tester does not utilize the power of the engine in the motor vehicle. Instead, the wheel of the vehicle is turned against brake resistance by an electric motor. Each type of equipment embraces the following functioning units shown in the drawing: Operating motor *C*, speed reduction *E*, planetary action *F*, driving rolls *A* and *B*, and weighing mechanism *D*.

The vehicle wheel rests on the two driving rolls which have a surface of such a character as to produce the same co-efficient of friction as a good cement road.

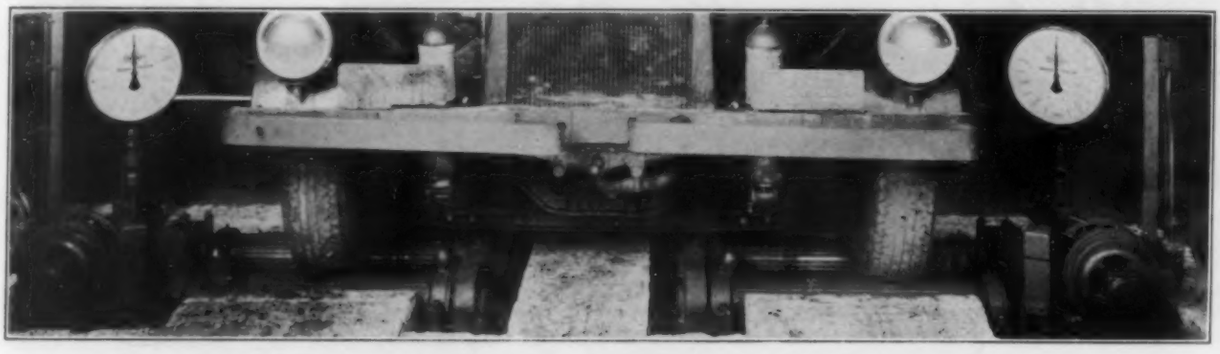


A Schemmatic View of the Cowdrey Brake Tester

The rear roll *B* is always the one driven by the motor, while the front roll *A* is driven from the rear roll. As the braking effort increases, the distribution of the load on the two rolls varies, so that the total braking effort can only be measured by weighing the sum of the two rolls at the scale *D*.

The "pull of the road" is indicated on an accurate, mechanical weighing scale. The reading is obtained by the planetary action of a train of gears. The amount of this action is directly proportional to the braking effort.

To save the labor of one man while adjusting the brakes, a Cowdrey pedal depressor is furnished with each brake testing equipment. During the testing operation, the greater the pressure exerted on the brake pedal, the more the vehicle attempts to climb backward out of the rolls. For this reason, it is necessary to restrain the car, if the brakes are to be adjusted at anywhere near



Using Two Cowdrey Dynamic Brake Testers for Testing the Front Brakes on a Motor Coach

their maximum capacity. The simplest method is to use a chain, from the front axle to a suitable anchor. The front carriage clamps must also be tightened to prevent them from traveling forward. For assembly line installations, an automatic bell crank latch may be used, requiring no connection or adjustment.

The National Railway Appliance Company, New York, is the agent in the United States for the motor coach and truck models.

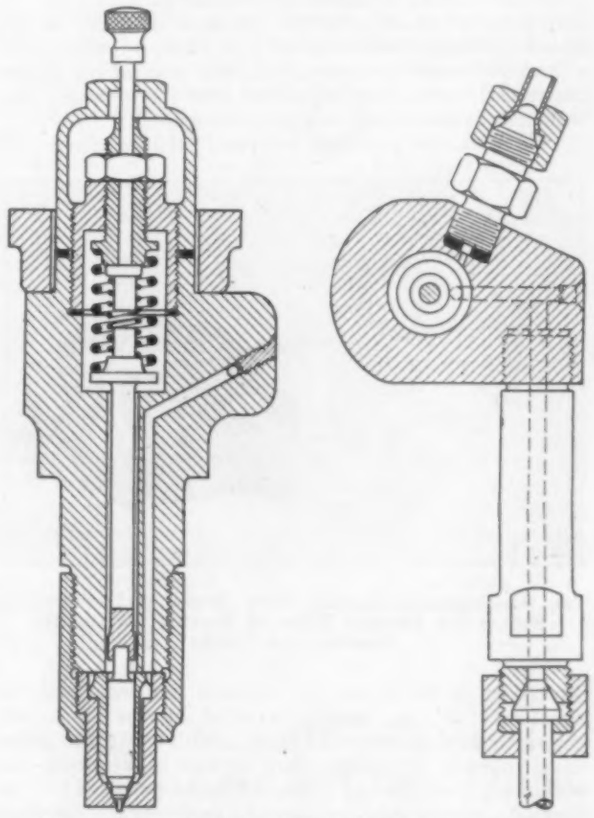
Fuel Injection Systems for Diesel Engines

THE Robert Bosch Magneto Company, Inc., 3601 Queens boulevard, Long Island City, New York, is exhibiting a fuel pump and injector valves or atomizers for use on Diesel engines which are used in motor trucks and coaches.

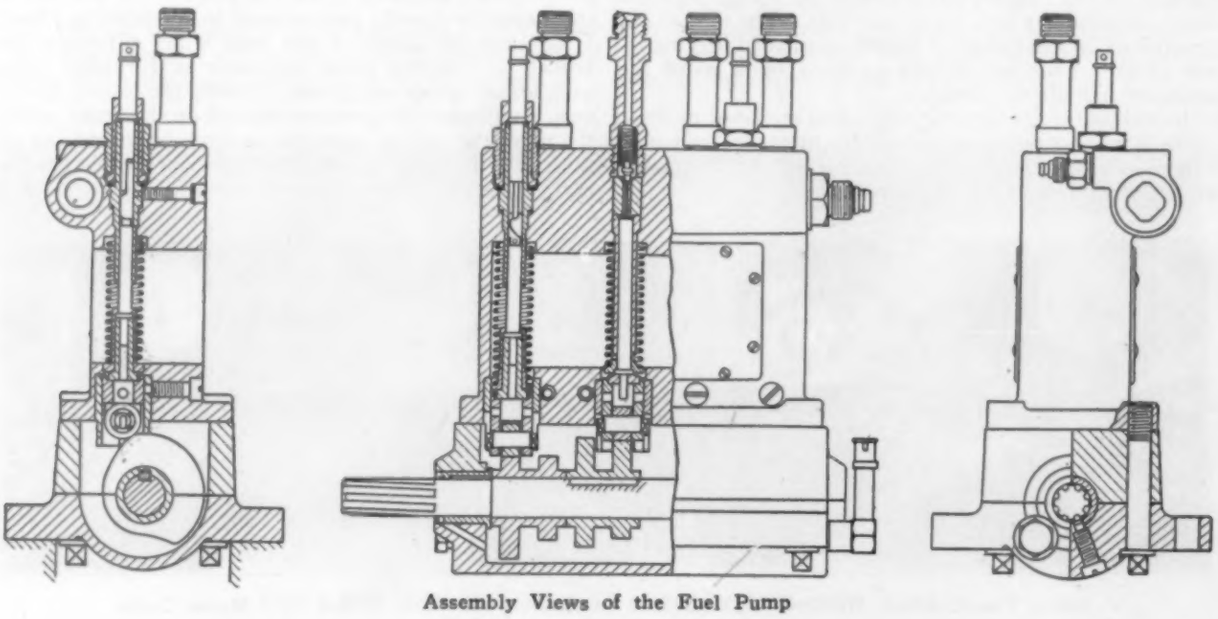
The fuel pump is a quadruple, with four pump barrels and four valve cylinders parallel thereto, all in the same block. The four pump plungers and the four piston valves are actuated from a single cam-shaft, which is offset equally with respect to both sets of bores. The pump is driven from the front gears of the engine through a centrifugal governor and a timing coupling. the cam-shaft is cut with splines at a slight helical angle, and by shifting the coupling along the shaft the timing of the pump can be advanced or retarded relative to the cycle of the engine.

Each pump plunger, at its lower end, carries a roller which rides on the cam. The cylinder barrel is not formed by the block itself but is in the form of an insert which is held against angular displacement by a set screw. The discharge valve also acts as a check to prevent the withdrawal of fuel from the pipe leading to the injection nozzle when the pump is on its suction stroke. Return of the plunger is effected by a coil spring.

The piston type of inlet valve is also operated from the cam through a roller and returned by a spring. Fuel enters the pump through a tube connection near the top at one end and flows through drilled passages to each of the four inlet-valve cylinders, which are inserted bushings. The inlet valve is provided with a collar with inclined upper and lower edges and variable width, and the valve is so timed, relative to the stroke of the plunger, that for a certain part of the delivery stroke of the pump plunger the passage between the valve chamber and the pump barrel is blocked by the collar of the valve. During the down stroke of the pump plunger the valve is opened and fuel is drawn into the pump barrel. During the first part of the up-stroke, the valve remains open and the fuel flows back freely through the inlet valve.



Sectional Views of the Arco-Bosch Injection Valve



Assembly Views of the Fuel Pump

Then the valve is suddenly closed and as long as it remains closed, the plunger forces fuel into the cylinder through the atomizer.

The length of time, relative to the duration of an engine cycle, that that valve remains closed can be varied by turning the valve piston around its axis. An extension of the valve which does not interfere with its reciprocating motion projects from the top of the pump and is provided with an arm from which a connection is made to the accelerator pedal.

The fuel enters near the top of the injector valve and flows through a drilled passage toward the lower end. As the guided portion of the valve is larger in diameter than its seated portion, there is a differential pressure action which lifts the valve and causes the fuel to be injected past a tip on the valve, which is supposed to influence the spraying action favorably. The lift of the valve is limited by a stop in the upper portion. Fuel that may leak by the injector valve stem into the chamber in the upper part is drained off through a tube.

The small pin projecting from the top of the atomizer is a feeler. By pressing against this pin with the finger, thereby compressing the light spring holding it up, the action of the injector valve can be "felt" and any irregularities in the action of the pump or of the valve detected.

White Coach with Inside Baggage Space

THE White Company, Cleveland, Ohio, is exhibiting a six-cylinder, 100-hp. motor coach equipped with a new type parlor car body, manufactured by the Bender Body Corporation. This coach has a wheelbase of 240 inches and a seating capacity for 33 passengers.

It introduces an innovation in body building in that all baggage is carried on the inside, free from dust and fully protected from the weather.

Made possible by special roof construction, overhead baggage compartments, which are loaded and easily accessible from the inside, run the full length of the coach on both sides. The compartments are ample in size to care for a maximum amount of baggage and in no way interfere with the comfort of passengers. The seats are upholstered in the finest of leathers. The rear seats can be made reversible, making possible the use of card tables for the convenience of its passengers.

Seating Arrangement and Overhead Baggage Compartment of the White Motor Coach

The White six-cylinder coach equipped with its 100-hp. motor and four-wheel Westinghouse air brakes, has easy riding qualities, in addition to power and speed.

Ventilating System for Motor Coaches

A MOTOR coach ventilator, designated as a Venturilator is being exhibited by the Consolidated Car-Heating Company, Inc., Albany N. Y. The action of the ventilator is positive under all conditions and is not dependent on the speed of the coach as is the case with ordinary exhaust ventilators. As the vitiated air is all removed through the floor register, there is no need to cut holes in the roof for ventilation, or to have any part of the ventilating system protrude above the roof line, con-

The White Six-Cylinder Coach, Model 54, with Baggage Space under the Roof

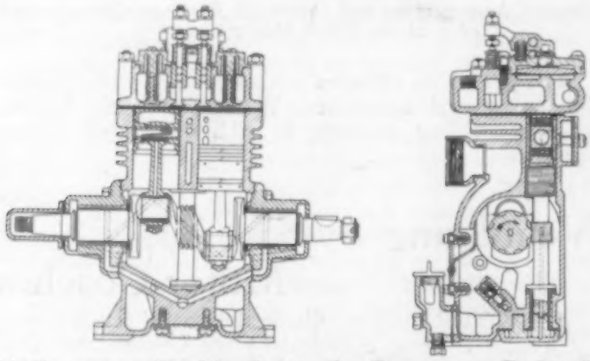
sequently no provision need be made to keep out rain and snow.

The unit is placed at the end of the exhaust line where the kinetic energy of the exhaust gases as they issue from the exhaust line, is utilized to induce a strong positive suction in the Venturilator, which is connected by an air-tight duct to one or two floor registers at the rear of the coach. The vitiated air inside the coach is sucked out through the floor registers, whether the coach is in motion or standing, and is not influenced by wind currents on the outside.

The design of the unit is such that there is no possibility of any of the exhaust gases entering the coach, and the tendency is to reduce rather than increase any back pressure on the engine. There are no moving parts in the Venturilator.

Air-Compressor Unloader Head and Automatic Governor

THE Westinghouse Air Brake Company, Wilmerding, Pa., has recently developed a new type of automotive air compressor with unloader head, and an automatic governor, which are now being furnished



Air Compressor Head for Automotive Compressors Designed To Control the Maximum Reservoir Pressure

with the air brake equipments for service on trucks and buses.

With no air in the brake system the compressor unloader head and governor are as shown in the illustration. As compression starts, air entering the governor fills the Bourdon tube and has access to the lower end of the valve.

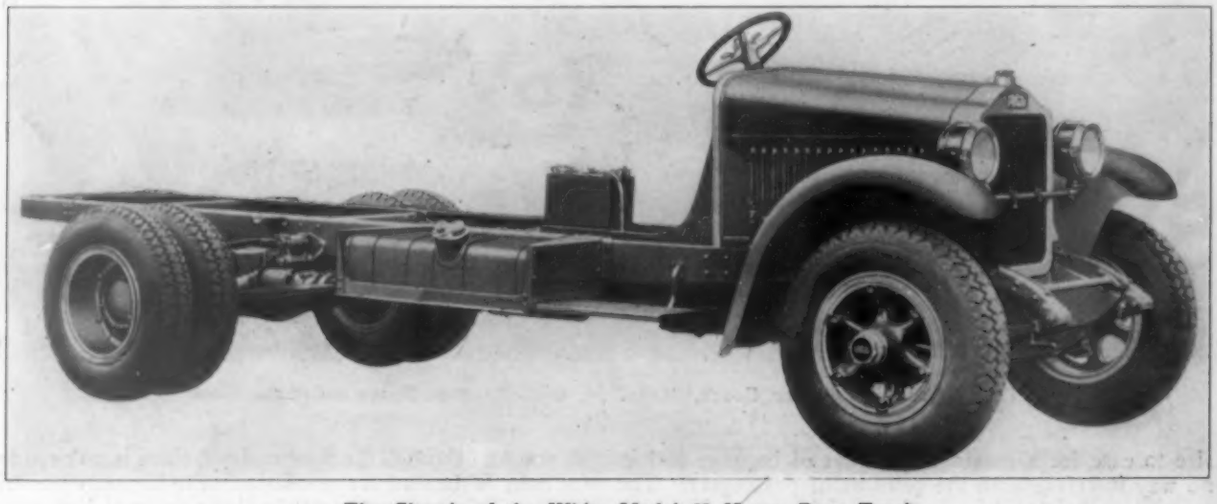
When the pressure exerted has reached a predetermined maximum the tube deflects, relieving the tension from the valve stem. The valve then lifts, permitting air under pressure to pass to the chamber beneath the diaphragm of the unloader head. Upward deflection of this diaphragm depresses an actuating lever which, in turn, unseats the two unloading valves, opening a direct passage between the cylinders. While these unloading valves remain unseated no compression takes place, since the air merely pulsates between the cylinders, and the discharge valves stay closed.

When the reservoir pressure is depleted to the predetermined minimum the governor tube contracts and exerts a pressure to return the valve to its lower position in which air is exhausted from the unloader head, permitting the unloading valves to be seated by their springs. This closes the passage between the two cylinders. Compression of the air past the discharge valves is then resumed.

White Exhibits a Heavy-Duty Truck

THE White Company, Cleveland, Ohio, is exhibiting a high-speed, heavy-duty Model 58 truck, the chassis of which was designed especially to meet conditions created by legal weight restrictions in numerous states, limiting the weight of the truck and load to 22,000 lb. or less. Rated at three tons carrying capacity, the chassis weighs only 7,500 lb. With pneumatic tire equipment and dual wheels in the rear, the truck is capable of carrying a five-ton pay load within the 22,000 lb. gross weight limit.

The truck is specially adapted for handling l. c. l. freight, owing to its high speed and flexibility. It may be equipped with a dump, van or stake body. With electric lights and starter the unit introduces a distinctive touch of style in heavy-duty motor trucks by the development of a stream line effect, augmented by a high, narrow, aluminum radiator, full crown fenders and other refinements of line.



The Chassis of the White Model 58 Heavy Duty Truck

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